

Where is my Stuff? Enhancing Supply Chain Collaboration beyond Tier-1 Suppliers

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in partnership with Edgeverve



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Foreword

Modern supply chains, already complex, have been further challenged by concurrent demand and supply shocks created by the pandemic. Enterprises are faced with balancing efficiency goals with service level objectives. Agility in execution is fast differentiating leaders from the rest.

The future of supply chain undeniably rests on leveraging technology to drive real-time action. Such action often lies beyond the enterprise boundary and entails real time visibility to a collaborative partner ecosystem. An agile buyer-supplier relationship defined by a common data understanding is key to generating value across the entire network.

This transformation to a collaborative framework requires a paradigm shift. Moreover, significant leadership and management effort are necessary to leverage the power of a global network across many tiers. Integrated supply chains require leveling partner process and technology disparities in such ways as to enable inter-operability.

A structured approach to partner collaboration can help unlock supply chain efficiencies, illuminating new business possibilities in ways we've never imagined before. With supply chain managers aiming to bring more control and oversight of the supply chain and scale buyer-supplier relationships, it's time to harness the power of a business network more than ever.

A game-changer, the collaborative framework is increasingly becoming a core capability to ensure supply chain agility, flexibility, and resiliency, thus laying the foundation for a new era in global sourcing and distribution.



Suresh Prahlad Bharadwaj,
Associate Vice President, Product Head - TradeEdge,
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Introduction

Many things have to come together to make a successful supply chain. From those first raw materials all the way down to the last mile, there are so many moving parts that it borders on a modern miracle that they ever come together to create the huge variety of products manufactured and shipped today.

It is only really possible with the widespread collaboration of many different actors. Potentially these can be split across a global network and stretch across many tiers. Each one can have its own unique quirks, ways of working and technologies deployed. This is not to mention internal collaborative challenges, with businesses often facing their own knowledge and communication from the inside.

Managing this, then, is a huge challenge and the need for effective visibility and collaboration has only been heightened by recent events that have shown the limits of complex global supply chains that are built largely on the basis of the lowest cost providers being selected. Companies all around the world and across a huge range of industries have seen their key suppliers suddenly cut off from their networks or their suppliers, reducing the amount of inventory they can provide without warning.

We are in the early stages of a major shift to change this existing framework. The dangers of the status quo are becoming all too apparent, but to address this, supply chain managers are aiming to bring more control and oversight of the supply chain and to reduce the distance between buyer and supplier, sometimes physically, but mostly in terms of their business relationship.

The emphasis now is on reliability, flexibility and resilience, all of which need to be underpinned by a strong collaborative framework in terms of both technique and technology.

This white paper will delve into those foundations for success, aided by opinions from experts across the supply chain space. Using their insights and our analysis, we will show you how to create a supply chain that can resist these shocks by having the right information from key stakeholders in place and then by acting on that critical data rapidly through strong, stable supplier relationships.

We hope this research proves useful and demonstrates the costs of failing to collaborate, as well as the importance of having the capacity to cope in times of crisis.

Alex Hadwick
Editor-in-Chief, Reuters Events, Supply Chain



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Keith Robertson | Group VP of Supply Chain Management | **Toyota**

1 A fractured supply chain is set up to fail

Supply chain success relies upon each element, whether that be a supplier, shipper or logistics provider, coming together and providing their key piece to the puzzle.

Lose one piece and the jigsaw is frustratingly incomplete, and once it is gone customers quickly notice.

This comes with considerable costs, both in the short term to the bottom line through lost sales, but also reputationally in the long term, as customers no longer view your organisation as a reliable, dependable partner.

The critical links that keep this whole fragile relationship together are information and trust.

Increasingly, we are seeing that supply chains that put their main focus on finding the cheapest supplier and maintaining only the most basic of relationships are falling down in the face of adversity.

Those that simply contracted offshore providers, but did not look to incorporate them into their management systems, to evaluate the risk to their network, or to strike up a strong relationship that could give the two sides confidence in each other in tougher times, are now finding themselves all-too-frequently caught out, or simply bereft of critical goods or materials.

It is now abundantly clear that any medium- to large-sized company needs to have a diverse set of suppliers and to understand their local situation, as well as have the right information on transportation networks, so that they can work around disruption when it occurs.

Those that cannot peer far into their supply chains and don't have the trust between themselves and their suppliers to gather accurate information are now paying the price.

1.1 Supply chains under stress

Supply chain professionals are juggling three different elements: "Cost, cash and service," says John Tamayo Valdivia, Senior Supply Chain Manager Pads CEET for Procter and Gamble, who sees his company constantly working "in the middle of these three variables."

In the recent past the trend across supply chains was to focus on the first element, keeping costs down and preserving cash reserves. This largely worked as it was a period of relative calm, with mostly localised breakdowns that remained regional all while global trade grew on the back of low shipping costs. This meant, at a surface level at least, service did not appear to be compromised.

"What we've seen from folks managing supply chains is that particularly if you look back a decade or more ago, it was largely about how do I wring more cost out of the supply chain?" explains Adam Borchert, Partner Bain & Company. "How do I take more inventory out and make things effectively ever tighter so as to be seeking greater and greater efficiency?"

However, as we have seen recently, a fragile bargain had been struck.

As Carlo Chiarle, VP, Manufacturing Operations, Global Manufacturing for car parts supplier Marelli notes: "Manufacturing operations work well if they are operating in a stabilised situation with a trend of improvement."



All of these effects show us the instability in supply chain processes and the need to become, first of all really fast and be reactive, but second to see how we can become more proactive".

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That trend has very much been reversed by the pandemic, which came close on the heels of an increasingly heated trade war led by the US and China. These issues have subsequently served to shine a light on the limits of current supply chain models.

Sectors around the world have found themselves disrupted and the service element has fallen behind as companies found that lean supply chains which focused, first and foremost, on the cost element were highly vulnerable.

“The number and level of dislocation caused by supply chain disruptions has really accelerated in the course of the past few years,” sees Borchert. “That’s everything from natural disasters to the pandemic rolling through right now, to cybercrime, trade wars, labour shortages, etc.”

“All of these effects show us the instability in supply chain processes and the need to become, first of all, really fast and be reactive, but second to see how we can become more proactive,” emphasises Chiarle.

Demand has become unpredictable too, exacerbating ongoing issues.

For Toyota: “When COVID hit we all dialled our plans back and many of the plants had to shut down,” says the Group VP of Supply Chain Management Keith Robertson. [However,] “the demand came back much faster than anyone had anticipated, and the plants weren’t back online as fast, so we’re all behind the eight ball as far as trying to build as many vehicles as we could.”

Borchert, who has worked with many fast-moving consumer goods (FMCG) companies around the world in his work on supply chains with Bain, sees continued long-term disruption from the demand shifts created by the pandemic, which is leading to “A world in which customer and consumer expectations are rising. We all expect our delivery times and windows to be getting ever smaller. We expect to know exactly where things are on their way to us. We expect greater customisation of products, faster innovation cycles and, at the same time, we’re asking for greater sustainability and products. So, I think you’ve got a set of rising expectations and requirements hitting the supply chains and, at the same time, more challenges and disruptions that are occurring.”

He believes that this is driving a “shift in what the priorities are for supply chains and supply chain managers over the course of the past few years,” where the importance of cost and speed in surveys they have conducted “has gotten cut in half and attention to things like flexibility, business continuity and resilience have gone up by a matter of 1.5 to four times in importance.”



Attention to things like flexibility, business continuity, and resilience have gone up by a matter of 1.5 to four times in importance”.



“There's certainly a greater focus on these things and, I think, a realisation that visibility is part of what's critically important to be able to enable some of those more resiliency-focused attributes of a supply chain,” he concludes.

1.2 The costs of constrained collaboration

We are, then, in a moment of profound change for supply chains, where the dynamics and relationships will need to be fundamentally reassessed so there is more open information across the board in order to enhance resilience and reliability.

Tamayo Valdivia notes that, right now, most work independently and says: “We are not pragmatic in that sense. We always share just what is needed right then, not what we really need [to truly understand the supply chain]. I think this is an ongoing challenge that we always face.” He believes that logistics professionals need to look deeper at what they share and how they do it.

The costs deriving from a lack of closeness between customers and suppliers come down to “Decreased service levels to the customers, and therefore, a huge amount of loss of credibility,” warns Ramit Mahajan, Head Supply Chain Enablement IMEA for chemical and consumer goods conglomerate Henkel, as organisations “are not able to manage the customer expectations correctly.”

This is particularly problematic for the sector he oversees, which provides the chemicals behind for a huge variety of goods. Positioned in the middle of supply chains, they “Supply to customers who have further commitments. If the products of the automotive OEMs or the diaper manufacturers, or a customer from any other sector are not in the market, their end customers and consumers, obviously, are not going to take it very kindly... For the industry, overall, it's a pretty massive loss of credibility, which in turn, of course, leads to lesser revenues and lost opportunities.”

There is also an internal cost to supply chain planning teams, he notes, from low levels of collaboration combined with instances of high variance and unpredictability. Distant suppliers failing to work in close coordination with their eventual customer means the “Work, which I used to get done through, let's say, 10 resources, now I need 20 resources for that same amount of work. Even though the productivity or the output has not increased, the input has in terms of the sheer amount of work to be done. This obviously results in a huge amount of cost, besides a high volume of manual work, which leads also to loss of efficiency, loss of productivity and increase in errors,” says Mahajan.

1.3 A fundamental shift in how we see the relationships in supply chains

“The resilience story has taken a front seat because of the supply shock that we experienced last year,” remarks Suresh Bharadwaj, AVP and Lead Product Manager for tech company Edgeverve.

A critical part of this is a reassessment of the relationship between different elements in the supply chain, how they interact with each other and share the information.

Now, companies are looking to distribute their supply base to more geographies in order to reduce vulnerability and introduce more oversight, as well as strengthening connections with their critical partners.

“I think one of the key things that we've seen in recent times, particularly during the pandemic, is that often procurement functions have tried to take a very sort of commodity-based approach to the way that they have traditionally purchased,” explains Professor Richard Wilding, OBE, Professor of Supply Chain Strategy, Logistics, Procurement and Supply Chain Management at the



The problem with that particular approach, and why things have failed for many organisations, is that actually collaborative relationships – having actually a higher level of relationship – has been absolutely critical, because by having that you're then able to secure the supplies you need”

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Cranfield School of Management.

According to Wilding, companies have typically said: "I'm going out to buy something, but I'm just going to buy it as cheaply as possible. The problem with that particular approach, and why things have failed for many organisations, is that actually collaborative relationships – having a higher level of relationship – has been absolutely critical, because by having that you're then able to secure the supplies you need, and so on and so forth. We're really in a world where you're procuring for resilience, rather than for cost. ... You're having to look at longer term relationships," where "suppliers feel you are the preferred customer to do business with."

Alongside this re-evaluation of the relationship between individual suppliers is a change in the structure of supply chains, which will increasingly be made up of a higher number of partners, situated across a wider geographic spread in order to create that now desperately needed resilience.

Professor Wilding emphasises that multi-shoring will be a key trend in the medium- to long-term to allow those many industries that have found themselves concentrated into relatively small areas to de-risk. "I've been talking to too many companies who said 'We have to multi-source.' Well, multi-source is not the same as multi-shoring. I'm ending up with companies who say, 'Oh yeah, we're very clever. We've got three suppliers.' It turns out, they're all in exactly the same area of China, and that whole place has been shut down."

In the case of Henkel, Mahajan says that they are going down the track of spreading suppliers "To add some redundancy.

"That's something that we learned early on, where we realised that our suppliers in some of the countries were kind of going down and we were heavily dependent on those suppliers in those countries. So, we started building some redundancy, some resilience in the network. I think we are well ahead in terms of the curve right now."

Wilding reckons that the trend for more variety in supplier bases will even go beyond finding new areas to site factories to working with a more diverse set of supplier expertise, drawing from other sectors. "So, I might say, 'Actually, I'm going to partner with that particular supplier, they're a bit more expensive, but their core competencies are supplying into automotive. I'm currently in pharmaceutical, but by partnering with them, I can actually learn and bring knowledge in from the automotive sector into my supply chain, to make it more competitive.' So, it's not just about those hard measures. It's also saying, 'well, what are the capabilities that these particular suppliers have? Can I bring that capability? Can I insource that capability into my supply chain?' That actually requires a little bit of a different focus in terms of the way we deal with and manage relationships."

This closer relationship to a more diffuse spread of individual suppliers will be important to de-risk supply chains from the major disruptions that can hit certain geographies, but it will also be needed to deal with the risks associated with climate change, consumer insistence on greener products and the move to deleverage industry from the extractive economy.

"Climate change is something real. It is not something to speculate with," states Tamayo Valdivia. "We need to be aware that this will change the consumer's behaviour. We cannot start building many more products with vertical-type supply chains where they go in one direction and don't have a circular loop where they could reuse the resources."

Instead, more integrated supply chains are going to be needed that leverage joint resources and expertise. However, with that, there will be a need for greater collaboration and collaborative mechanisms that can support this emerging new reality in supply chains.



Climate change is something real. It is not something to speculate with"

2

Breaking down the walls: How to build an organisation free of silos

Before companies can look outwards at their supply chains, they need to make sure that their own house is in order. Internal siloes continue to be an issue across many organisations and cooperation is stymied by a lack of communication and forward-planning between different departments.

Greater logistics effectiveness and efficiency are not just gained through focusing on the production and transit of goods from partners but also via a smooth operation inside a company that can focus resources onto critical problems, react flexibly to a wide range of scenarios and bring in stakeholders from across the business to weigh up the options and make the right decisions.

2.1 Creating internal clarity

In Borchert's experience with Bain it is not unusual to "Run into silos within organisations." For example, "the sales and marketing functions may not be 100% aligned and connected to many of the supply chain functions," which reduces visibility and creates "internal friction" as supply chain teams struggle with new product launches or demand fluctuations, while sales and marketing lack awareness over what is possible from a logistics perspective.

He also warns that "People may be reacting based on the incentives given to them," but these can have unintended consequences, where they drive employees to do "exactly what their incentives align them to do, but it's not in the best service of the overall business. So, you get local optimisation," but when it comes down to "making tough decisions and trade-offs across functions," there is problematic dislocation and conflict between teams.

Therefore, it is critical to look closely at how the business aligns across functions and how information is disseminated, utilised and acted upon.

This is exactly what Toyota found itself doing in earlier crises, most notably the 2011 tsunami, which had a severe impact across the car giant's business, causing them to evaluate at how they shared information business-wide.

"It was painful at first," remembers Robertson, "because we were just joining in parts of the group that didn't know which way we were going. So, we had to quickly come together and realise that we had to form a cross-functional group and the cross-functional group, as you can imagine, was pretty limited. At first it was mainly focused on the manufacturing side, but you know, shortly as we got into the crisis, we realised that we had to link in the sales operation side as well, because ultimately the vehicles obviously flow to our dealers and to customers. We needed to share what was going on with those folks as well, so they could disseminate the information to the dealers and ultimately to the customer."

Robertson explains that it was a critical learning process, through which "We've refined our crisis coordination procedures, if you will, over the years and so basically, we just dusted off that



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playbook and inserted it for COVID. It allowed us to continue to manage our operations in a very timely manner and as one organisation because we had had these playbooks from the past.”

Marelli’s journey has been remarkably similar, focusing on creating a centralised planning committee that can share information across the business and act upon emerging issues rapidly, says Chiarle.

“From September of 2020, we made a core team involving manufacturing operations, the purchase team, the sales teams and engineering to try to become more reactive, because when you have such a big organisation,” even a delay or closure to a small plant deep in the supply chain is likely to rapidly cascade downwards, meaning that “if one supplier is having a problem, maybe one business unit has been affected immediately, but very soon [after that] another business unit can be affected.

“Then you are risking a delay to the delivery, which often are conducted just in time to our final customer.

“So, the first task has been to become really reactive,” he continues. They wanted “to have quick and almost immediate capability to share information from the lowest the plant level up to the head of our organisation, so that they have prompt and updated situational [awareness] about any crisis.

“We put in place a specific meeting that we call a pyramid meeting for making prompt escalations of problems. The innovative approach in these meetings is that all the business units participate.”

Robertson say Toyota is taking the same approach, stepping up its cross-organisational coordination in recent times. “For example, even this week, there is a meeting with the entire supply base, including tier one, to share what’s going on with our latest plans. So, in turn, that allows suppliers to proactively share information with our purchasing department. That’s, I think, all very positive.

“I would say suppliers are not holding anything back,” he says, referring to these meetings. They can then utilise that to “set up all of our meetings, feedback from the suppliers, feedback from all organisations, so as to have all the best data on a certain day this week in order to make the best decision for their next production forecasts.”



2.2 The power of prioritising

Key to making these meetings work and minimising the potential for major disruption is a deep understanding of how your own supply chain works and where the focus will need to be at any particular moment of disruption.

What are the most critical materials and sub-components? Where are the transportation bottlenecks? What and where are my most business-critical partners and customers? What can I absolutely not afford to arrive at my production facility by X date?

These are the questions that supply chain planners need to ask, if they haven't already, so that they can prioritise the right route in their planning as soon as an adverse event occurs, and then cascade that through their organisation and straight to key suppliers.

Key players need to understand before the disruption occurs what they need to be monitoring and then which levers to pull, so they can then prioritise that in the moment and not waste time figuring out what is going on and what direction to take.

"I think the key for us is [that] we always come back to what do we feel like is the core information that we need as the control group to make a decision?" explains Toyota's Robertson.

"Understanding what information we need as a control group to make a decision, and then knowing the timing, or when you have to make the decision, for me, those are the two most relevant pieces of information," he says. "If I know those two things, then we, we can do this all day long. Now, it's very painful, but we can do it, right? We can continue to manage this COVID mess."

Deriving supply chain resilience for Bain's Borchert "Is around prioritising use cases. To know where there are specific situations that are particularly vulnerable and might have the most upside," and then focusing on these in critical moments, followed by "then looking for how to pilot technologies" in these problematic areas "to prove that they work with an eye towards scaling quickly."

HHenkels Mahajan notes that this approach has worked for them in terms of increasing their reliability. They started by focusing on getting real-time data on its production lines "So within the factories, we have more transparent information available more easily," and can identify "which lines need more maintenance."

He also notes that "We are trying to take that to our logistics networks. We are trying to also ensure that we have more visibility of the incoming trucks, or the outgoing materials, or the materials which are in transit, and so on. That's something that we are also trying to get pretty aggressively, although our first phase focuses on factories, and then the second one on logistics," which, he finds, can then be used to "foster collaboration."

Borchert gives an example of a retailer he recently worked with that "Wanted to look across all the categories that they carried in their stores, to evaluate, which were the most critical for their consumers, and also which had the most risk ... whether it was concentration of suppliers, or lack of substitutes, or otherwise. They basically came up with a prioritised number of categories and said those were the places where they were going to proactively reach to develop a more consistent and technologically-enabled set of visibility and/or add greater resiliency via other sources of supply, etc."

2.3 Keeping on top of rapidly changing scenarios

How do you create an outlook and a plan for the complete unknown?

That's the headache being faced by many supply chain professionals right now because the set of circumstances is unprecedented. Outside of global conflict, there hasn't really been a comparable point at which so many different elements of global trade and production have been



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concurrently affected as there has been during the pandemic.

This means that forecasts are unreliable and supply chain planners are facing a whole new set of scenarios that they are extremely unlikely to have encountered before.

“In all forecasting our algorithms are really based on our past experience,” says Cranfield’s Professor Wilding. “Problem is, we’re in a new normal now, a new world now, and a lot of the data that we had, we can no longer use for forecasting, and that’s really driving us to think very differently about supply chains.”

“Since the pandemic, forecasting has clearly been a bigger challenge than ever before,” agrees Henkels Mahajan. “In an ideal world, we would have a fairly consistent forecast, which has obviously gone for a toss in the last one and a half years,” he comments.

This is especially problematic in the world of globalised trade we exist in now. “Of course, that impacts the capability of our supplies,” he notes “because our supply network is fairly global. So, if the forecast changes now, no matter how quickly I want to react to that, a significant amount will already be on the water” or be in the process of moving through a “factory in Europe, but needs to go to China.” That “now needs to be accounted for and there’s a fair amount of lag in all of that, so any forecast change adversely impacts us.”

How, then, do you become suitably prepared and ready to make the right call with a host of global suppliers shipping worldwide when there are almost weekly developments occurring that change the game, whether that be COVID-based closures, localised congestion or, as happened recently and unexpectedly, power shortages affecting factories and ports?

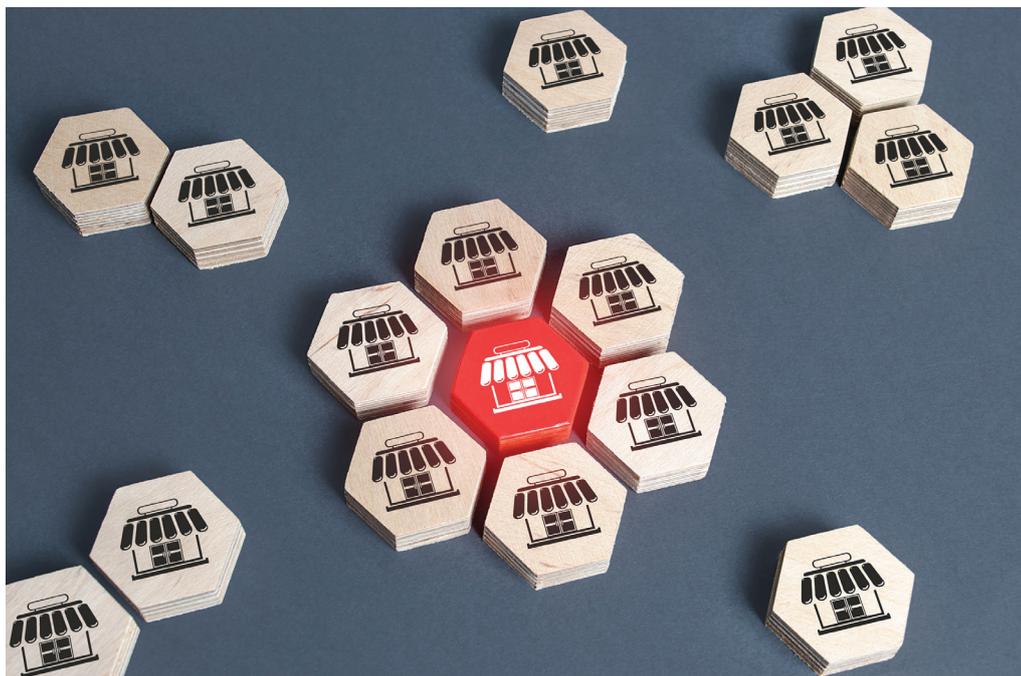
As noted above, increasing the frequency of planning meetings and building close coordination across organisations is important, as is knowing where the most functionally critical and vulnerable elements within your supply chain lie. However, increasingly it is about scenario planning and having a fall-back plan that can then be quickly deployed and disseminated across a supply chain at difficult moments.

Wilding thinks this is long overdue, as he notes with tongue somewhat in cheek, that “There’s only two forecasts: Lucky forecasts and wrong forecasts.

“We have to actually take a slightly more pragmatic approach and recognise that a lot of our time series now are completely corrupted,” he thinks. “Yes, it would be nice to get better forecasts,



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but actually, for a long period of time now, forecasting accuracy in most situations has not really been improving," he says.

P&G's Tamayo Valdivia is also of this opinion: "Overall, the approach of forecasting did not change much. We are just using fancier tools to try to figure out the topics that are not really the core of what we should be asking, [but] sometimes companies don't realise that and they pay more and more professionals to work on this particular way of doing exotic forecasting."

Instead, Wilding suggests: "Accept that a forecast is a forecast. You need to have a certain level of accuracy around it, and that depends on the environment, but actually, if you're using forecasting as a planning tool ... then you don't need it to be 100% accurate. You can get away with other levels of accuracy."

Instead: "Scenario planning is the approach that we have to take. We basically have to say, 'Well, okay, it could be this, it could be that, could be another scenario.' Let's actually plan for those, and when we see that we're going down that particular route, as it were, then we go all right, we'll get the playbook out and we'll enact that."

One way of going about this is to utilise digital twins, which means "You can start modelling in a sandbox environment," says Jesus Beas, VP, Global Supply Chain Management Transformation Office for Marelli. These can take a real-world structure, such as a supply chain and then allow planners to change key variables to understand how a scenario will play out.

"You can actually have the baseline. You can play with the numbers, and then you start seeing how weak your supply chain is, how constrained your supply chain is, how much information are you going to be able to take out of this model and maybe improve your business," explains Beas. "You can scenario role play with this tool."

Once scenarios are planned out, it is important to then share these with business-critical suppliers, so that when an issue strikes, every key player in the supplier chain is singing from the same hymn sheet.



Scenario planning is the approach that we have to take"

3 Swimming upstream to bring value back down

Right now, there is a visibility gap that pervades far too many supply chains. Relationships between end customer and suppliers have been too shallow. Many only have transactional relationships with their tier one suppliers, and those tier one suppliers are limited in number.

That isn't where supply chains end for most organisations, though. Their supplier's supplier is usually just as crucial as the tier one supplier in keeping goods moving, providing sub-components, processed chemicals or raw materials that then underpin the next product in the chain.

Not knowing what is happening at each stage leaves supply chain planners and their organisations highly vulnerable to disruption. They cannot know when extra capacity is needed, or how their production lines will continue to be fed, even in the short term, with any real confidence.

It is critical to deepen the direct data links upstream in supply chains to reduce vulnerabilities and enhance planning capacity. Direct information-sharing capability with the first level of key suppliers is a vital step for creating confidence. However, to create real resilience logistics professionals will need to go further and look at tier two, three, or even beyond, to be truly aware of what is happening in their supply chains.

Achieving this is no easy task, however.

There is often wide disparity in technological adoption, platforms or logging procedures and, unfortunately, the drive to reduce costs has all-too-frequently created a reticence about sharing real-world and near real-time information that genuinely reflects the situation within supplier organisations.

Trust will need to be sought and maintained in both directions. Players within chains should look to create mutually beneficial exchanges that move the capacity to anticipate and react into much earlier timeframes than we typically see today.

The end game will be mutually supporting information flows that can be turned into real-time data streams. These will be automatically monitored and the systems will rapidly alert supply chain professionals as soon as a situation requires their attention.

3.1 Driving a deeper understanding of upstream supply chains

In Tamayo Valdivia's experience throughout his time working in supply chains, "We always talk about ... the siloes organisations have within a company, but further than the scope of the company, we are very much still detached," for the upstream of supply chains. "We don't think as one single value stream across our value chain. So that's, for me, one of the challenges."

"We see a lot of people without visibility beyond tier one suppliers," says Borchert. "I think even where you do have the tier one relationships, what we find is that oftentimes some of the sharing can be limited or not as timely as it might ultimately be to help."

"Take auto, for example," he explains, and "the chip shortages that are happening, which have caught some of the players off guard. That's partly because they're not able to look multiple tiers



We see a lot of people without visibility beyond tier one suppliers"

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back in many instances to just understand what your supplier's supplier's supplier is looking at from their situation and how that might have ripple effects downstream."

Therefore, addressing visibility and data sharing is key not just from the perspective of enhancing supply chain collaboration, but from a complete supply chain effectiveness angle.

There is also the angle of "Traceability back to the origin, which is particularly important for sustainability perspectives," notes Borchert, "that is challenging today in many industries." This is a factor only set to grow in importance as product safety and origin become more important to consumers, as well as in measuring and reducing emissions in supply chains.

Strengthening data links between suppliers and buyers is not going to be easy, however, as there are significant hurdles to overcome, not least of which is the natural tendency to protect internal business data, even when it can be used for mutually beneficial purposes.

In Borchert's experience: "Retailers can be reticent to share specific inventory positions and sell-through data back to consumer products companies. I think it's born out of a historic relationship of one is a customer of the other and, therefore, giving some of that data is perceived as perhaps tipping a hand and reducing kind of negotiating power capability."

However, one can see how "As a consumer products company, understanding what's happening closer to the end consumer who's buying the product from the shelf might allow you to be more responsive and [have] better direct inventory."

Then there is the security angle where he has heard clients express concern that "Once data leaves my four walls, it won't be mobile, [and it will be] more vulnerable to cybercrime or other corruption."

This level of mistrust is also a result of the focus on costs in supply chains noted in Chapter 1. As buyers focused on price alone, they forced their suppliers to work with very low capital and on razor-thin margins. These kinds of working relationships breed a reticence about visibility and create a fear among suppliers that they will have to reduce prices further or that transparency will reveal their vulnerabilities and encourage their partners to look elsewhere.



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As already noted, we are moving away from this model and the vulnerabilities revealed by the ongoing situation have enhanced the arguments for focusing more on cooperation and resilience.

With the benefits of increasing collaboration through data sharing and visibility into deeper tiers becoming more obvious, addressing this mistrust becomes a key objective and will require concerted and directed efforts.

3.2 Winning trust will be key

“For me, it’s frustrating that we are pushing to be secretive within companies [and supply chains]”, says Tamayo Valdivia, especially given the benefits outlined above and how it rarely masks the true situation, only delaying the realisation that there is an issue.

To overcome the reticence, organisations will need to move closer to their suppliers and build relationships and trust, but they can also use smart approaches to data sharing to make progress.

At its core the trust factor will revolve around “Creating incentives for your partners to collaborate with you” says Edgeverve’s Bharadwaj. “If you create enough incentives as part of that relationship that is the first, most important step forward in terms of visibility.”

Borchert agrees that although “each relationship and situation will kind of require a different solution [a core part is to ask] ‘How can we take a step back and look at this from growing the pie overall, so that we’re both benefiting?’

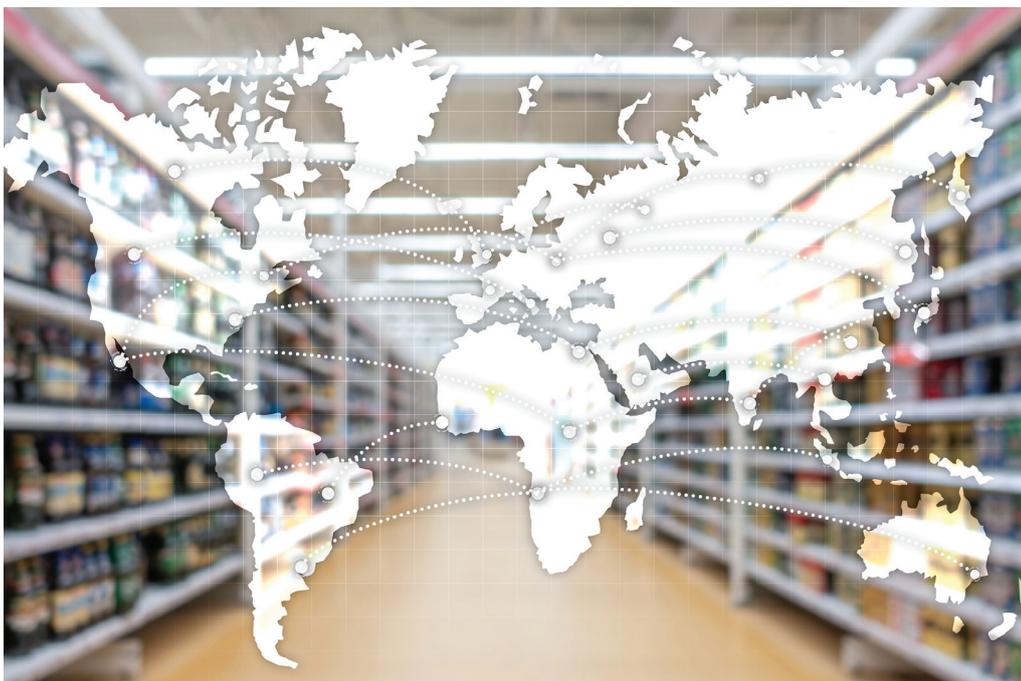
“That might be taking aggregate inventory out of the entire system, or it may be developing value-added services that will ultimately allow for new revenue streams or increased prices for services that are valued by end consumers,” he explains. “In those instances, we should pursue this because we’ll actually both make more money. We just need to figure out how we how we share that upside.”

However, it is also worth discussing information from “A resiliency perspective,” when clear wins from a financial perspective can’t be obviously achieved or seen, he says.

In these instances, where it might be a tougher sell to suppliers, supply chain professionals can ease minds by asking “Why don’t we find a way that we can put the required data into some sort of cleanroom, where we can do the analytics that would benefit one or both of us, without



If you create enough incentives as part of that relationship that is the first, most important step forward in terms of visibility”



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exposing the counterparty to all of the underlying data that that we might say is competitively sensitive or supplier-buyer sensitive?" Then "with the right structures around it, sometimes third legal entities or otherwise, and the right algorithms over the top, we're able to get the insights that will allow us to better react in the supply chains."

Beyond this, Borchert sees "The deployment of technologies like blockchain to attempt to secure the data" becoming "kind of table stakes, if you will, for everyone to trust that the data exchange and storage is as secure as possible."

Bharadwaj also notes that "Collaboration could be driven on the buy side as well with suppliers. That data could be used to establish supplier ratings in terms of on-time deliveries in full and all of the metrics that you typically use in logistics or in supply. Then we can build capabilities around that to see if there are any risks that exist not just with the specific supplier, but also in the industry as a whole."

3.3 Supporting suppliers leads to success

Experts interviewed for this white paper view increasing visibility and cooperation with suppliers as being so critical to the successful functioning of modern supply chains that they also suggest direct financial or IT support for partners.

"Sometimes you need to help provide the solutions to those less enabled suppliers in the value chain, who may not have the technology base today or may not be able to afford it given their margin structures," advises Borchert. "That's where I think understanding the value of that visibility may help you make a business case that says it's worth me helping them subsidising or providing some base level of technology that will ensure improvements to my visibility."

Bharadwaj suggests that it is important to think about the technological playing field and make it as easy as possible for your supply chain partners to come in and contribute information rather than forcing their hand.

"Our viewpoint is that you don't mandate anything," he says. "If you mandate that I want to receive information so many times per annum in some pre-specified formats," then "it's going to fail. They're going to rebel... Therefore, make it easy for them to share that information."

He suggests that supply chain professionals take a viewpoint of, "I'm more interested in your information than how you send it, or how you share with me."

That is why they have worked to create "A data exchange on the cloud, that can handle all of those variations in how people throw data at us" and turn it into "a single uniform feed, that is consumption- ready, so that they don't have to worry about all these variations."



I'm more interested in your information than how you send it, or how you share with me"

3.4 Case study: Increasing stock but keeping it lean

Bharadwaj remembers working with a major FMCG company to answer questions about why their fulfilment rates with distributors were coming in below expectations.

All too often the company found that orders were not being fulfilled at the rate it would expect, but it was unclear why.

Better data-sharing between the company and its distributors indicated that the issue lay in inventory availability, with distributors frequently low or completely out of stock.

"When [the FMCG company] went back and looked at their own fulfilment to the distributor," they found "a direct correlation between why the distributor was shorting a customer order," and their own stock provision, which was insufficient says Bharadwaj.

"Therefore, the company was able to then say: 'Look, I'm going to make sure that you're always in stock and I want to see your rates go up.' And that's exactly what happened. We were able to drive a case fill rate up by anywhere from six to 8%, in some markets, even as high as 10 to 12%," improving top lines for both distributor and supplier company and therefore enhancing resiliency and profitability.

"Then there was another minor benefit with the distributor," he notes. "Because the distributor was providing inventory visibility, the company was also able to look directly at the SKUs and ... liquidate what we call slow-moving or non-performing inventory. So that freed up working capital for the distributors, which means they could flow that money back into something that was actually selling. That was the other incentive.

"So, the company was now able to be more responsive to the distributor needs, because they had the visibility of what was selling, what was not selling, and what kind of inventories the distributor was carrying. Therefore, they could adjust their own replenishment to the distributors accordingly" on a near daily basis but "it still could be lean. It doesn't have to build any buffer at that point in time. You could still be driving growth by just being responsive."

4

A connected cycle of information to create supply chain harmony

With the complexity in modern supply chains, tying it all together into a coherent whole increasingly requires a technological edge.

Fortunately, a suite of technological aids is increasingly available to supply chain professionals to create visibility and enable them to utilise that insight to more effectively control their operations.

“The first level is just to get more visibility than then we’ve had historically,” says Bain’s Borchert. “That may be through rigorous Continuous Replenishment Program (CRP) implementations. It may be through IoT [Internet of Things] in your facilities that give you more data what’s happening today. It may be sensors on truckload shipments to know better where things are out on the road, as examples.”

Then the “Second level is to layer on and say, allowing for traditional silos within supply chains, how do I optimise now that I have that greater visibility? What can I do better in planning? How can I better sequence my runs in my facility? How can I better manage my distribution network? ... There’s then a level above that which is asking how do I make sense of an orchestration across the siloes of my supply chain and out to my customers and my suppliers?”

The kind of layering approach described by Borchert is set to become more common and can provide benefits at each level. The culmination is a degree of automation that will take over more and more of the basic framework of ordering and tracking shipments, as well as monitoring documentation and production facilities.

Reaching this stage, along with achieving end-to-end visibility, is set to be the next critical development of supply chain management and it will be accelerated considerably by knock-on effects of consistent post-pandemic disruption.

4.1 End-to-end visibility and the role of control towers

“One of the most challenging things is to have visibility,” says P&G’s Tamayo Valdivia, but “when you have, in my case, three manufacturing sites and five platforms to run effectively serving 20 plus countries, it’s a matter of probability that something can always go wrong,” making it beyond critical for Tamayo Valdivia, and anyone overseeing a complex supply chain, to add a high degree of digitally-enabled visibility into their supply chain.

As already outlined in the paper, a significant element of this is to enhance oversight of internal processes and to extend the reach of information flows into the upstream of supply chains.

However, in a modern supply chain this can quickly become a complicated web of data and so planners need help in centralising, cataloguing and managing this constant flow.

As Marelli’s Chiarle explains: “We need to be able to have a complete picture of the situation immediately and then to be able to see the actions that need to be taken to avoid shortages, because the priority number one for us is total customer satisfaction.”

Control towers can play an increasing role in tying a supply chain into a coherent whole that has end-to-end visibility. These centralised decision-making and data dashboards bring together



We need to be able to have a complete picture of the situation immediately and then to be able to see the actions that need to be taken to avoid shortages”

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the information critical for that supply chain and allow for rapid analysis and action.

Robertson and his team act as the control tower for Toyota “gathering the best information that we have,” from every angle, encompassing suppliers, manufacturing plants, the HR department, sales, marketing and purchasing.

Then they can make “Decisions on how much production we’re able to run? Do we have to shut down? Do we have to cut back? Can we run overtime or not? These kinds of very detailed decisions are being facilitated out of my group based upon the best input information that we have. Now normally, as I mentioned, we make that process happen every month, but now because of this COVID situation, we’ve been doing this process on basically a daily basis in the meetings and on a weekly basis, we’re making [production] decisions.”

Similarly, at Marelli they are “Collecting all the information that is available from the markets, that is available from the supplier, that is available from our customers that are buying from other tier one suppliers and which are struggling; we are collecting all this information in order to have, in a proactive way, a wider vision of what will happen. The concept is to avoid surprises or unexpected bad news to arrive on our desks.”

The next step, following this concept of centralisation into a control tower, is “Working with the customers to enlarge the span of visibility farther,” and then to add in artificial intelligence that can predict patterns in the market for Marelli. This means they have increased their ability to predict customer-demand patterns to cover an 18-month timescale in conjunction with their partners. Marelli is then passing this benefit on to suppliers.

The aim of the predictive approach “Is to enlarge the span of visibility from both sides – supplier side and customer side – with the aim of providing a more stable vision to the industrial operation.”

4.2 Feeding market demand into supply chains

Marelli’s approach of adding in demand data to its control-tower approach is prudent because there can be substantial efficiencies in understanding demand patterns and opening up demand-side information to the wider supply chain.

This latter factor is increasingly being recognised as a means of providing resilience to supply chains and should be considered a key goal for those looking to improve supply chain collaboration.

“A demand signal that is emanating from a point-of-sale system in a retail store is as important to an end supplier of a raw material of your finished goods product as it is to the forecast or a demand planner,” states Bharadwaj. “If you can make that seamless, make that demand signal flow all the way to the uppermost point in your value chain, which is the raw material supplier and then try to optimise it, then I think you have a chance at reducing friction.”

Mahajan agrees, finding that “The more transparent we make the information, the more we smooth out the nervousness in the chain,” and consequently, the better the logistics will function “and the better the forecasts tend to be... I think the important thing is to get the market signals as quickly as possible and then do the best we can to respond.”

Bharadwaj gives an example of this in practice: “We proactively went out and collected data about virus caseloads in the New York State when the cases were rising very rapidly. This was in the spring of 2020.” From that they could make predictions for their clients about “which stores are going to run out of stock and by when, simply by correlating that to the virus.”

“We were able to limit stock-outs in certain categories, and especially the hand sanitisers, paper towels, and the disinfectants, and so on in those categories ... but also our customer increased their market share in those categories by about four to five percentage points.”



The more transparent we make the information, the more we smooth out the nervousness in the chain”

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Demand connectivity can also help collaboration the other way, creating direct access to new inventory for retailers. Bharadwaj recently worked with a major sports apparel manufacturer which had lengthy lead times and planning cycles on its products, so when the pandemic hit “Orders that were placed the previous year continued to get delivered into the next year, even when all the physical stores were closed. So, they had a pile-up of inventory that they didn't know what to do with and some 500 million pairs of shoes that had no place to go.”

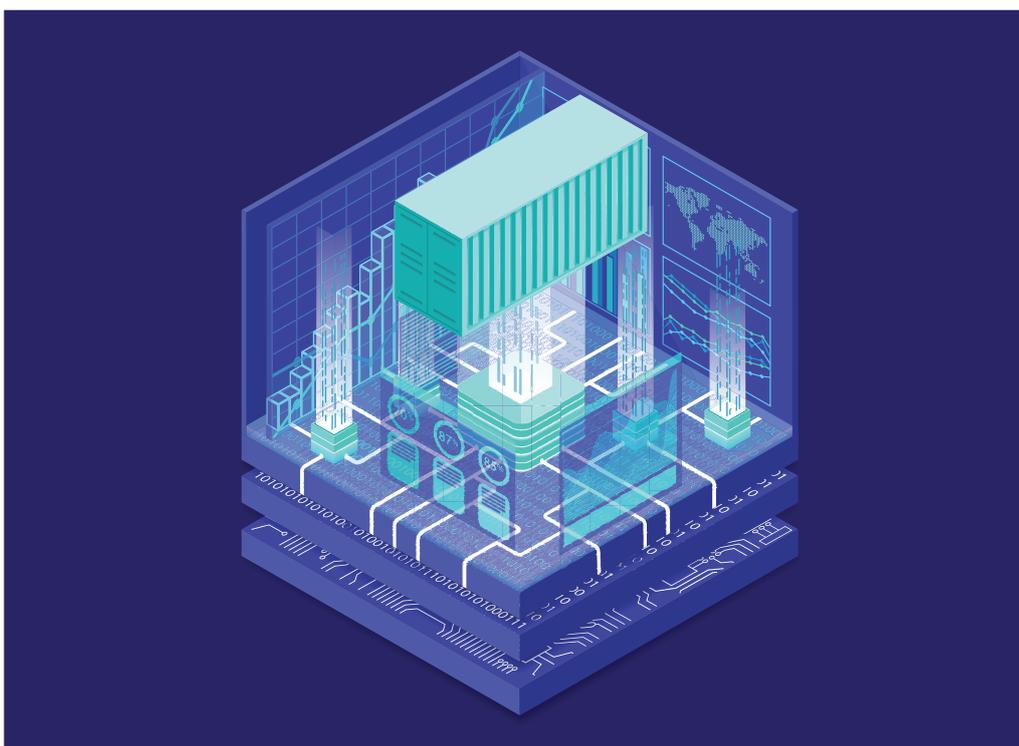
However, by connecting online retail partners directly to their inventories they could begin to shift the overload of backlogged inventory with confidence, even though that inventory didn't sit with the retailers at the time of sale.

“The use case there was for the manufacturer to tell the retail partners ‘Hey guys, please go ahead and take those orders. I'm going to make my inventory visible to you ... so you can go ahead and take orders for those items, and I will fulfil those orders,” directly after routing to the manufacturer.

He believes this kind of flexibility to collaborate and find new outlets for inventory “Is something that's going to sustain way beyond the pandemic. This is not just a unique use case anymore. I'm hearing more and more of our customers talking about ‘How do we drive peer-to-peer fulfilment? How do I create an endless aisle for products not just on the on the front end of a website? But also, when it comes to fulfilment, if a primary supplier cannot fulfil an order, ‘how can I look for alternate suppliers in real time and still accept that order knowing that I will be able to fulfil it maybe not from my physical stop, but from my partner stock?’ This is driving rebalancing of inventory across the environment.”

4.3 Being agile by using technology

The final layer in the supply chain collaboration and visibility puzzle may end up being the most transformative for the professionals working within it - automation. Through automation, logistics professionals can be freed from a host of background tasks and address the huge number of potential variables that effect even a moderately sized supply chain nowadays.



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For example: “In developed markets, when you’re looking at bringing point-of-sale information, it could easily run into several gigabytes of data every day, depending on the granularity of such information,” outlines Bharadwaj. “The frequency of sharing that information and the granularity of sharing that information could create an explosion of data,” to which the only real answer is some degree of automation.

Mahajan is spearheading this kind of approach at Henkel, where they “Are trying to secure as much as possible from a process perspective, besides trying to automate a whole lot of these processes.” Although, he admits that “when the supply chain is going through a ripple,” as we are now “automation becomes a tough nut to crack.”

However, the benefits are clear, meaning that Henkel can now take what is “Even in our regular business scenario, thousands of SKUs on a typical week or a month that the supply planners need to plan,” and then use automation to reduce that burden down and make sense out of the noise.

“Now, we generally plan by exception. We let the algorithm do most of the work. It’s only the exceptions that generally my supply planners would look at and act on. For that, we try to have the best business intelligence tools as possible. We’re constantly upgrading these tools. We’ve already got a fairly advanced set of analytics, but we are trying to actually hire data scientists with even better knowledge of analytical tools to be able to enable the supply chain with the kind of information that we need on a more real-time basis.”

P&G’s Tamayo Valdivia concurs: “You need to have timely data,” that can then be parsed to find those dangerous items that need a human approach. This is done by flagging the exceptions and the dangers while the system continues to move the typical business load.

“I need to see when an arrival is not going to come through early in my supply chain, to know that I can put in place a mediation plan.”

He gives the example of the recent Suez Canal blockage, in which this kind of outlook would allow a planner to see what inventory was held up even when in transit, to understand what the business critical items are, and then “If you have already worked on those type of scenarios, you can immediately move to a mitigation strategy and potentially charter airfreight for key items within hours, [rather than realising] we were already occupying all the capacity of our suppliers a couple of weeks later.”

He continues: “That is actually how you leverage visibility, because having visibility without automation built on top is just a nice-to-have.”

“At the end of the day, we need to be proactive,” in taking in supply chain risks and then working within our networks to prevent issues building up, says Professor Wilding. This is a sentiment that was echoed throughout the interviews conducted for this white paper.

“For example, BMW had a concept called ‘proactive risk management,’” he explains, where “they knew where all their supplies were positioned. If a hurricane or an earthquake took place in the world, they could look at the map and they could see certain suppliers may have been impacted by that. What they would then do is proactively get onto their procurement teams and say, ‘Can you contact these people? Check they’re alright, see if they need any support and then we can start actually managing this more appropriately.’”

“It’s not just about sales and operations planning,” he thinks, in the current climate. “It’s now about actually creating that intelligent network of people, so that we’re getting systems that can start making decisions or suggesting decisions, and that’s, if you like, the next generation of approaches that we’re going to find.

“At the end of the day,” he concludes “we’re trying to create wisdom. So that, if the person has the knowledge, then they can make wise decisions on what needs to be made within that environment.”



Now, we generally plan by exception. We let the algorithm do most of the work”

5 Conclusion

Where does supply chain resilience come from? It's a question that has become predominant during the course of the last two years and it is set to remain the critical question in transport and logistics for the foreseeable future.

As we have seen in this white paper, the absolutely critical elements in answering this question lie in improving insight into an organisation's supplier base, having the right internal structure, scenario- planning, and tools to action any findings promptly, as well as moving away from a pure cost-cutting approach towards one that supports suppliers and engenders trust between parties.

At the heart of this shift are the information flows. Supply chain professionals need to have consistent data arriving in their control towers and planning rooms that reaches far beyond the typical cursory data on tier one suppliers, and which can provide early warnings of distress of pieces in the system and in critical transportation channels.

However, these key players also need to remember that data should flow back towards their suppliers, who may often lack the oversight and capacity that they have in their roles as supply chain experts.

They need to search for the win-wins that build trust with their suppliers and leave all of us less vulnerable to the shortages that have plagued so many industries recently. This might be opening up market-demand data to suppliers or it could be providing them with an open platform to input their own stock, or opening up inventory availability directly to suppliers and distributors.

Although the solutions need to be tailored to the scenarios and situations of particular supply chains, it is clear that fostering cooperation across all supply chains can provide some of the most important benefits in some of the shortest timeframes. Right now, we are facing significant structural supply chain issues in many sectors that could take years to be rectified, but what can be done in months or even weeks is to create strong internal and external collaboration that can increase resilience, improve reactivity and introduce more flexibility.

The next step is to take this improved data, generated by better collaboration, and start to turn that into automated insights and actions. This will free up supply chain professionals to focus on the most problematic scenarios and thorniest issues that we face today and give them the opportunity to usher in a new age in supply chain management.



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