Rebalancing supply chains for an agile, resilient and sustainable future

A joint white paper from Reuters Events Supply Chain and A.P. Moller - Maersk

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Foreword

If there’s one word that defines the conversation around supply chains in 2020, it’s risk. This year has been a wake-up call for many, either illuminating gaps we were unaware of, or making very clear which issues we have been putting on hold and failing to solve, even though we knew there might be issues.

It is clear that we now have to deal with this risk head-on, as the COVID-19 crisis has shown that the leanness and efficiency we had reached in many supply chains has made many too brittle. In a wide variety of cases, the savings achieved from this approach are overshadowed by the loss caused by disruption.

These breakdowns in supply chains are going to become more common, not less, meaning that although we will return to some sort of baseline and will continue to produce in a globalised system, we will all have to give greater accountability to the risks.

From the growing challenge of climate change, to cyber-attacks, to natural disasters, to changes in trade conditions, to conflict and political instability, to another pandemic, the risks are numerous and several of these categories are either increasing in frequency or severity.

Supply chains need to distribute and decentralise production, reshoring and onshoring some functions, but also need to dig down into their suppliers. Companies need to ask difficult questions of their suppliers and look beyond tier-1 to try and understand where the potential bottlenecks are. Companies can get a head start on this and also improve resiliency overall by weaving in sustainability goals into the core fabric of their supply chain approach. Companies that have put an emphasis on sustainability have been shown to have greater resilience through difficult times.

Organisations also need to take a fresh look at visibility and procurement, bringing in technologies and automation that can make their lives easier when communicating and managing and tracking shipments.

All in all, a holistic approach is required that reassesses the supply chain, its operation and where its vulnerabilities lie, before taking a rigorous approach to rebalancing and reinforcing with the end goal of resiliency and long-term sustainability.

Alex Hadwick
Editor-in-Chief, Supply Chain
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Chapter 1: Risk and reward

Supply chains are always a case of risk and reward, especially when factoring in the number of stages goods have to pass through and the multiple borders they have to cross. Often, they are carefully calibrated systems, requiring a well-oiled hand-off of products and on-time deliveries of raw materials and components. The efficiencies of these systems in normal times is not in question and this is why just-in-time manufacturing rose to become the dominant mode across a variety of industries.

The downside is when things don’t go to plan. Besides what was already a sourcing shift trend, the trade conflicts over the past years made many companies reassess their approach to sourcing long before the COVID-19 pandemic. Nevertheless, the immediate impact of the pandemic has been tremendous on supply chains, becoming the most significant world event in the post-war environment. Demand across a wide suite of products cratered as economic activity was curtailed by lockdowns. Factory doors were shuttered in key production areas, first in one of China’s industrial heartlands, and then in an increasing number of locations around the world. Transport links that ran like clockwork suddenly melted away and products were stranded in overstretched ports.

The net result has been a chaotic environment, with supply chain managers desperately reaching out to new suppliers and trying to grab capacity on trusted transportation links, or reaching out to new solutions and booking intermodal capacity to reach end-market. Warehouses have been stripped bare of consumer essentials, or alternatively have begun to see inventory pile up, such as in the case of some fashion categories.

This has been a major shock and it has forced a generation of supply chain managers to re-evaluate their supply chains and look at whole new ways of doing things.

Why we ignored the risks and the size of the problem

So why did we build global networks and move towards these kind of supply chains that are so exposed to shock?

“What has tended to happen is companies are focusing on price reduction and optimisation of the supply chain,” says Professor John Bryson, Chair in Enterprise and Economic Geography at Birmingham University’s Department of Strategy and International Business. “So, the primary focus is driving enhanced profitability by minimising expenditure without focusing on risk. … Now, one of the things that’s happened is the nature of risk has changed because we’ve had a convergence of a whole series of technical systems and a whole series of other systems that’s partly linked to globalisation and partly produces globalisation. The world is becoming more interconnected, and as we’re getting more interconnections and more convergence, that’s producing what I’ve labelled in one of our most recent papers as ‘extra-network risk’.

Bryson also notes: “the more effective it is and the more profit orientated, [then] the more extra-network risk that sits beyond it outside your control. When that extra network risk impacts your supply chain, in this case COVID-19 occurs, you have a major supply chain outage.”

Bryson also notes: “a problem of sunk costs. So, companies have invested in particular operations, particular structures. If they alter those, they’ve got to wipe out those costs that are embedded...”
and that you can’t recover. That produces some degree of rigidity within a supply chain and
within a company performance."

This is especially so in companies that are building complex, multi-component products
requiring large assembly lines and automation, such as automotive or aerospace manufacturers.
Not only in this crisis, but in prior crises too we have seen this issue at work. The original
champion for lean, just-in-time manufacturing, Toyota, found itself struggling for months to
recover production following the 2011 Tohoku earthquake because it could not easily source
components from other locations or rapidly repair damaged facilities. This meant that a host
of different elements were unavailable and production was affected at a global scale.

Bryson terms this ‘obsolete logic’. ‘Obsolete logic occurs when you identify the optimal
configuration of supply chain and then circumstances change, but your supply chain doesn’t
change and you don’t reconfigure sufficiently enough. Then it’s suffering from obsolete logic:
It was fine; now it’s not.’ In the case of Toyota in 2011, this resulted in a **77% drop in first quarter
profits** in that year, despite the earthquake occurring only at the end of that period.

Ed Barriball, Partner at McKinsey, warns that this is exactly the kind of learning point companies
should have been on the lookout for and it is far from atypical for supply chains. According
to research conducted by Barriball and his McKinsey colleagues, ‘Companies will experience
a disruption lasting one month or longer, about every three and a half years - 3.7 is the exact
number - and given the frequency of disruptions that occur, the average company can expect
to lose about 40-45% of one year’s EBITDA (Earnings Before Interest, Taxes, Depreciation and
Amortisation) over the next decade.’

Furthermore, their research suggests that disruptive incidents are increasing in frequency,
making it more important to account for and mitigate these potential losses.

### Expected loss from supply chain disruptions equal 42% on one year's EBITDA on average over the course of a decade

<table>
<thead>
<tr>
<th>Net present value (NPV) of expected losses over 10 years % of annual EBITDA</th>
<th>NPV for a major company, $ Million</th>
<th>NPV of expected losses, EBITDA margin, pp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace (commercial)</td>
<td>67%</td>
<td>1,564</td>
</tr>
<tr>
<td>Automotive</td>
<td>56%</td>
<td>6,412</td>
</tr>
<tr>
<td>Mining</td>
<td>47%</td>
<td>2,240</td>
</tr>
<tr>
<td>Petroleum products</td>
<td>46%</td>
<td>6,327</td>
</tr>
<tr>
<td>Electrical equipment</td>
<td>42%</td>
<td>556</td>
</tr>
<tr>
<td>Glass and cement</td>
<td>41%</td>
<td>805</td>
</tr>
<tr>
<td>Machinery and equipment</td>
<td>40%</td>
<td>1,084</td>
</tr>
<tr>
<td>Computers and electronics</td>
<td>39%</td>
<td>2,914</td>
</tr>
<tr>
<td>Textiles and apparel</td>
<td>39%</td>
<td>788</td>
</tr>
<tr>
<td>Medical devices</td>
<td>38%</td>
<td>431</td>
</tr>
<tr>
<td>Chemicals</td>
<td>35%</td>
<td>1,018</td>
</tr>
<tr>
<td>Food and beverage</td>
<td>30%</td>
<td>1,578</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>24%</td>
<td>1,436</td>
</tr>
</tbody>
</table>

**Source:** McKinsey Global Institute, 2020

“The problem that folks often have is they’re a bit risk blind. They actually
don’t know what risks they’re bearing, they don’t have a good sense of
where the risk sits, and they don’t have a good sense of sort of how to
value that risk”
This massive loss potential simply has not been fully taken into account by companies.

“What's going wrong with supply chains is companies failing to learn and failing to learn at the right time,” comments Bryson. “Supply chain adjustments should have occurred from around 2003 with the disruptions that occurred related to SARS, and a whole series of other potential other disruptions that occurred over the last 20 years, and there's been very limited response to significant disruptions within supply chains.”

Barriball agrees that we all need to be looking far harder and deeper at risk in supply chains. “The problem that folks often have is they're a bit risk blind. They actually don't know what risks they're bearing, they don't have a good sense of where the risk sits, and they don't have a good sense of sort of how to value that risk. I think we saw after the global financial crisis, the banks, all of a sudden, were now mandated to start doing stress tests, and really think about how much risk they were bearing in a variety of situations…. I think this is a time now for supply chain and operation leaders to start taking on a bit of the same mindset [and ask] ‘how do I get a much better understanding? How do I go from being risk blind to actually really understanding my risks, being more resilient and having a good idea?’

Where do the vulnerabilities lie?

“There's not one kind of shock that everyone needs to worry about,” says Barriball. Instead McKinsey has identified “four categories of shocks or disruptions … based on an axis of how much lead time would you typically have to predict them and how extreme can they be?”

Firstly, are “the company level disruptions that will happen. They might be quite sudden and the cost is not huge, such as a surprise supplier bankruptcy.” Then, there are disruptions that “aren't as costly, but you can predict them over a long term - something like a set of suppliers who are just becoming more and more financially weak and at some point, probably there's going to be a problem, so there needs to be a restructuring”.

More costly are events that “could happen very suddenly and be extraordinarily costly like a cyber-attack that would disrupt the global financial system… and then on the other side is actually pandemics”.

In the view of Phil Roe, Chief Customer Officer and Strategy Director UKI at DHL Supply Chain: “The disruptions typically faced by an organisation can be split broadly into three areas:

“The first of these are the demand-side effects and cover anything to do with customers. Demand-side disruptions might be driven by promotions, or any uptick in demand, and require full visibility of as many layers of a customer base as possible. It’s good to know what your customer is thinking, but even better to make sure you're aware of what your customer’s customer is thinking too.

“Supply-side disruptions are much harder to control, and it can be much trickier to manage, particularly for businesses at the end of a supply chain with many other parties involved. In this case, proper mapping and supply chain visibility gives a business the ability to understand how to coordinate the activity of their suppliers.

“Finally, environmental disruptions cover things like regulatory change, customs delays, lockdowns, and any other event in any part of the country or world that may have an effect on the supply chain. These are almost entirely out of the control of a business, but need to be properly monitored and their impacts understood in order to manage their effects.”
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Supply chain risks typology

The China Conundrum

Over the last 24 months, the critical country when considering the vulnerability of global supply chains has undoubtedly been China.

China’s name has come up again and again in both 2019 and 2020 as trade wars were followed by the country being in the front line of the pandemic and the centre of the outbreak that swiftly went global. This is a major issue in a country that has emerged as the workshop of the world, producing everything from rare earth metals, to textiles, to plastics, to automotive parts, to electronics.

For the apparel industry specifically, China remains the largest exporter globally, with a 30.8% share of clothing exports, and still accounts for 59% of all US footwear imports even after years of decline.

“The first lesson that we have learned,” said Nate Herman, SVP Supply Chain of the American Apparel & Footwear Association at the Reuters Retail Supply Chain USA 2020 summit, “is that we should get out of China” due to this preponderance.

This decision has been brought to the fore as the need for change reached a crescendo this year. “First, we had the supply chain shock that started at the beginning of this year. Even though we were moving out of China and producing in other countries, we learnt very quickly that many of the materials that we were using were still coming from China: The leather; the shoelaces; the yarns; the fabrics; the zippers; the buttons; raw materials [were all] still coming from China,” noted Herman. “So, even though we are producing in other countries, we still had to shut down production because we couldn’t get the materials.”

Herman also notes that the trade war and US-China tensions are playing into the decision-making process, with policy instability and tariffs making life harder for manufacturers.

Herman is not alone in this sentiment. The need to rebalance and pivot away from China to some degree has been here for some time.

“From my perspective,” says Trent Davies, Senior Manager, Ho Chi Minh City Office at Dezan Shira & Associates, “companies were beginning to look to move out of China for quite some time, given that the costs were increasing, the labour costs were increasing, and the government was...
“What we’ve learned is that we really need to spread out our production so when shocks like this happen, we’re not at a complete loss.”

The need to redistribute and to reconsider value

The severity and depth of the loss of most of China’s export capacity from global supply chains for just a few months has focused minds, and the COVID crisis is set to be a catalyst for an increase in the speed of global rebalancing.

A critical lesson Herman feels has emerged out of the crisis is to not “put all of our eggs in one basket. Our industry already made that mistake with China, and now we’re trying to learn from it”.

However, the real lesson is not just about China but about the location of production as a whole. “The issue is many companies have decided OK, we’ll move all of our production, or much of our production, out of China and put it in another country and now we’re seeing the potential downsides of that. India has experienced shutdowns across many states in the country because of Coronavirus, so people who bet on India as the alternative to China are having trouble getting their production and being able to get their product out of the country.”

He also noted this problem occurring in Bangladesh, and in El Salvador where government instability led to recent factory shutdowns that were changing almost on an hourly basis.

“So, what we’ve learned is that we really need to spread out our production so when shocks like this happen, we’re not at a complete loss,” says Herman.

Bill McRraith, Chief Supply Chain Officer for PVH Corp (the company behind brands such as Calvin Klein and Tommy Hilfiger) agrees with this sentiment and believes that “Anybody who’s not thinking about nearshoring or onshoring today is way behind the curve. At this point, you should have been thinking of it for the last three, four or five years.”

This is because “the edges are blurring around the efficiencies, the footprint and the cost differentials between offshore and onshore.” The cycles of consumer demand are also becoming shorter, “they only want what they want when they want it,” says McRraith, “and it’s tough to do that at great distances.”
This means that “we’re in the biggest transformation of the supply chain that we’ve seen in the 30 years,” thinks McRaith.

Bryson advises that to meet this challenge we need to alter “the ways in which companies consider value. What I’ve been arguing is that if your primary value is on stripping out costs and focusing on profit, that might give you a short-term advantage, but it’s going to give you a long-term disadvantage.”

Instead, he believes that what “one then needs to do is think about other forms of value that sit within your products and within your supply chains,” based on three alternative types of value beyond just profit maximisation and cost minimisation in their most basic forms:

First “is the value related to speed and proximity: Being closer to the client, being closer to the market and staying closer to market demand. [This] cuts out some of the costs within your supply chain, but it also cuts down some of the risks within that supply chain.”

The next consideration comes “from value chain integration. Because you’ve set up a complex, heavily dispersed global value chain that comes with a whole series of additional costs, those additional costs are also exposing you to additional risks. So, there is a tendency now towards value chain integration, which is about bringing that dispersed value chain back into something that looks a lot more integrated and a lot more localized”.

The final form “is value that has nothing to do with cost, but gives you cost-related benefits” from redistributing or restructuring production. This may be reputational, such as the bump that comes with putting ‘made in USA’ on a product or “related to decarbonisation” as consumers look for more environmentally friendly products. The latter, as discussed in Chapter 4, also comes with additional value in and of itself, as those companies focusing on sustainability already have a head start when it comes to resiliency.

The overall picture, then, is one of re-evaluating and redistributing supply chains so that they are less vulnerable, less centralised and better able to react to changes from upstream disruption and fluctuations in end markets.
Chapter 2: The logic behind manufacturing and the challenges of relocation

The risks outlined in the previous chapter have already been recognised in the industry and previous crises have illuminated these vulnerabilities to some degree. It seems easy in this context to simply say we should have moved production a long time ago but, in reality, it isn’t that simple.

These systems of production and trade have arisen because of a powerful network of economic forces and policy choices that have pulled the manufacturing of certain products towards several nexuses. Their benefits to global supply chains have not entirely diminished and moving production from one geography to another is not a simple switch.

China, the most prominent example, built up its massive position in global production and trade through a huge labour force that was cheap, of course, but it also supported this with incentives, financial support and infrastructure that created pools of skilled labour that were easy to access and employ on a large scale. This is no mean feat and, as we shall see in this chapter, that advantage is a hard thing to part with.

China’s big advantages and the challenge of shifting production

There is a reason production across so many industries and to such an extent was centralised in China: It is effective.

China has numerous advantages and many companies are only just discovering that those advantages aren’t always shared by other locations.

China provides major clusters of skilled labour, and although wages have been rising rapidly, it is still relatively cheap when compared to the productivity-per-hour level in Western countries. There are few other locations on Earth where you can effectively shop around to get the best
deal from numerous factories across such a wide range of industries, from pharmaceuticals, to plastics, to textiles.

Fiona Ki, formerly VP of Global Sourcing & Product Development at Bombas Socks and now at American Eagle, explains the pull of China for the apparel industry. “Even about a decade ago, people were already thinking that they need to shift away from China but the shift has actually gone from the south of the country more into the mainland instead of away from China completely, just because the skill set, the understanding of the industry, and the agility in terms of Chinese companies has been one of the best in the region in terms of dealing with this business and in terms of speed, in terms of innovation,” especially when it comes to the supporting machinery available.

Davies agrees that the skillset is critical in the decision-making process surrounding moving production. “Some people who moved from China are a bit shocked. They feel like they need twice as many people to do the same amount of work. There are gaps in the supply chains. There’s not as much depth as in the supplies and processing companies in China. You’ve got decades of experience and people developing skill sets … so, getting the same quality isn’t going to be as easy potentially in a less developed manufacturing destination.”

Josue Alzamora, Global Head for the Lifestyle Vertical at global transport and logistics company Maersk, explains the complexity inherent in these choices and the need to consider economies of scale throughout the supply chain. As part of a research project focused on sourcing they conducted as one of the world’s most critical international logistics providers, they “Realized that it was cheaper to produce apparel goods in Ethiopia versus in other large origin locations, with all related costs being considered.” However, “this topic cannot be seen one unit at a time, as it is equally about the ability to produce at scale over a wide assortment and about the overall efficiency. Countries including Vietnam, Indonesia, Bangladesh have an advantage in terms of the efficiencies and scale also because there is a wider and more experienced workforce available, versus that of the more recently growing manufacturing countries.”

China has another advantage in its infrastructure. Already within its borders are modern ports, airports, railways and highways and the government remains focused on improving infrastructure consistently. It is now moving beyond coastal hubs and looking to improve road and rail links further inland.

Davies remembers back “When the tariff war hit, and companies moved quickly, I think often they didn’t do their research. Vietnam is a very long country … and there’s different industry clusters in different parts of the country. So, if you just say, ‘we’re going to Vietnam - let’s find a cheap rent, we’ll set up in this industrial zone’, and you haven’t factored in the road and the rail infrastructure challenges, you haven't factored in where are the suppliers? Or how are you bringing in raw materials into the country? Is there congestion in that port or that city? It’s important to look at all those things, and because of the logistics challenges in a developing country like Vietnam, you want to be as close as possible to your suppliers and to the ports”.

Alzamora agrees that it is vital to take into account how the processing will work. “In an industry such as apparel, you need a range of inputs to production.” Here China has another advantage as “normally, if you have the production in China, you can actually do the insourcing in China as well, but if you have it in Southeast Asia, or in Ethiopia, and so on, you are likely to need many of these inputs to production such as textiles shipped from one location to the another, and then manufactured and then shipped again, from that facility to your final destination. So, when we look at the topic, we have to look at not only what comes out of a manufacturing facility, whether it’s either near-sourced or not, but also what has had to go into that facility and where it comes from.”
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These advantages and challenges mean we are looking at more than a decade of transition to new locations outside China and moving to a “China plus-one-model, or China plus-two-model” as Davies puts it where “maybe they still do part of the process in China, particularly those who maybe can sell to the domestic market there. But they’ll also supplement their manufacturing there with facilities in say, one or two other countries to allow them that diversity, that resilience, and that flexibility in their supply chain, in the event of a trade war, or in the event of a pandemic”.

For industries that already have multi-sourcing from multiple countries, such as apparel, “you’re going now from a China plus one or two countries to China plus 10, 20, 30 countries”, thinks Herman, underlining the redistribution and the potential complexity. Ki notes a similarly flexible position where “we’ve been working to shifting those businesses into different regions, [via] maintaining maybe the same supplier but with a global presence,” a position that McRaith wholeheartedly agrees with (see Setting up a new source for more).

Rising locations for production

So where are things headed? While some production is moving back into the internal markets of countries, the real transition is going to be towards a wide spread of countries, with Southeast Asia, the Indian subcontinent, Turkey and Mexico some of the biggest destinations for inward investment.

In fashion, “besides China, there is an expertise built on especially in Southeast Asia and the Indian subcontinent. And in the last decade or so, we’ve been seeing a steady increase of apparel production, in places such as Turkey and Morocco,” driven by market dynamics but also, critically, favourable terms of trade between source countries and key markets, says Alzamora.

Herman sees similar trends: “You have countries like Jordan, who have always been a player in the apparel space and are now moving up. You have of course Myanmar. You have Ethiopia…. There are a lot of countries and for many companies this is the first time they’ve ever been dealing with these countries. But of course, if you look at these numbers, you’re talking about 1% of total US imports, 0.4%, 0.3%, 0.1%. None of these countries alone are going to take up what’s coming out of China. You’re going to need a lot of countries in order to do what China is doing today, or even what China was doing a few years ago.”

“I’d say we are moving away from China,” notes McRaith, “and that’s been a really six, seven year strategy for us to really diversify away from China. Our new focus now is really Africa, and growing off Sub-Sahara Africa.”

In their eyes “there’s nothing about Sub-Saharan Africa that is any different to China. In fact, if anything, it’s in a much better positioned place.”

“So Ethiopia, and Kenya have been what we call the beachhead for us as we entered - that’s where we landed,” and they’ve been able to grow a major manufacturing base in these countries. Even as they are doing that, they are now looking to the next major production centre, which McRaith is planning to be West Africa. “When looking at West Africa now as an opportunity, it has an amazing cotton source. It also happens to be closer to Europe closer to the US than East Africa does.”

Davies also sees the trend of shifting production in other verticals, such as electronics, where “Samsung, LG, Apple, Foxconn are beginning to make their products in Vietnam and potential other investments…. That’s not to say they didn’t go anywhere else. I think companies realized, you know, it’s not a single country that replaces China and nor is that a safe model. What you’re looking at is having some manufacturing maybe in Malaysia, or Thailand, or some in Vietnam.”

We are then looking at a more distributed global system of production across a wide variety of industries that keeps one foot in China but spreads the load more widely in an attempt to reduce risk.
Chapter 3: Building a resilient, agile network

There can be no going back to business as usual, that much is clear. In the immediate term, demand levels remain far off-kilter, and production and transportation have not yet returned to normal, with airfreight is being used less by companies due to the situation, shipping snarled up, and the threat of lockdowns being imposed at any second hovering over a large number of economies.

Looking further ahead, it appears that this is a wake-up call for company c-suites and supply chain managers. There is now a genuine push to transition supply chains away from the heavy focus on leanness and its associated centralisation of production into a handful of key facilities that produce and send product just in time. Instead, there will be a transition towards a more distributed model of production and stock holding, although cost pressures will mean this will always be limited, especially if the global economy continues to struggle to regain momentum, hitting company and consumer purchasing power.

The question is, then, how to go about this process in a way that reduces risk, increases the ability to absorb shocks, and allows for greater agility without breaking the bank.

In this chapter we will explore how to reshore the right way, how to manage lengthy supply chains and the technologies that can help supply chain managers in the rebuilding of their supply chains to create more visibility, accountability and resiliency.

The technology changing the terms of trade

Many companies now have substantial and hard-to-manage supplier networks. The largest reach out to huge networks. For example, McKinsey found that when it comes to publicly disclosed tier-1 suppliers, major multinationals are now running staggeringly vast supply chains. For example,
auto manufacturers General Motors and Volkswagen have 856 and 723 suppliers respectively, Amazon has 835, Walmart 697 and Airbus an astounding 1,676.

Although these are examples of major multinationals, this list of tier-1 suppliers illustrates the complexity that now pervades supply chains and is likely to increase as companies look to redistribute production over a wider geographic spread. There is then a huge need for technological help to monitor and understand these nebulous manufacturing networks, especially during times of crisis. Fortunately, there is a growing suite of technologies that can help facilitate visibility, supplier management and shipping.

**Data and visibility**

When it comes to agility and robustness in the supply chain, the first thing to think about is instituting visibility across a supply chain.

Indeed, a [survey of retailers](#) found that those categorised as high performers were 22% more likely than average or poor performers to say that they are focusing on real-time, end-to-end visibility, with 76% noting it as a priority for their business.

Research from [PwC](#) found that amongst those it categorises as high-performing ‘digital champions’, 77% have implemented solutions giving them visibility across their end-to-end supply chain and 81% “achieved external collaboration or end-to-end orchestration”.

“Gaining a full view of your supply chain across all nodes is the first step towards tackling issues,” says Alzamora, and protecting from “stock-outs, lengthy inventory cycles, unforeseen disruptions, and so on.”

“This visibility is built on three core components: reliable data, smart tools, and robust supply chain processes. And equally important, involving experienced supply chain teams who manage, standardize further, and continuously improve processes.” To adapt to the rapidly changing business environment, supply chain visibility cannot be limited to just transportation legs, or even to finished goods supply chains in isolation. There is increased value (and resilience) in having visibility across upstream and downstream supply chain flows in conjunction (from pre-production to finished goods). The more inter-connectivity between systems, the more it then allows you to convert valuable insights into actions and impact.”

From Barriball’s perspective, “step one” in moving towards end-to-end visibility “is just know who you’re buying from. Sounds very trite, but if you talk to a lot of companies … and then if you ask, ‘Do you know who your supplier suppliers are?’ You’re in a world where many people are completely blind.”

Unfortunately, “there isn’t kind of a one-size-fits-all magic tool that’s going to illuminate your tier-two, tier-three, tier-four suppliers. You need to be using a mix of data that’s out there,” stretching across proprietary data, open-source data, macroeconomic data, geographic analysis, and engaging in supplier collaboration “particularly with critical suppliers, to help them jointly investigate the supply chain”.

Barriball suggests looking at internal systems and metrics first, with an emphasis on keeping it simple, followed by building out into easily available data sources. “I think sometimes people hear data and trying to figure out who all our suppliers are and unifying data systems and they start to think about big IT projects and lengthy timelines. We find that companies can actually do this very quickly. The tools exist today. Frankly, a lot of the data is out there today. Either they have it or you can go buy it relatively quickly to do the assessment of ‘where do I really have vulnerabilities?’”

Ki believes that it is imperative to move beyond emails and Excel to track and manage shipments, instead using vendor portals and shipment tracking through a third party to monitor
where product is and how suppliers are faring. "I think the electronic component does give you a visibility on the flow and allows you to have a much higher-level view, instead of just granular like that available through email or on an Excel spreadsheet."

However, the system is only as good as the people behind it, as Ki notes it relies "on the people who give it and enter it, so on top of that, I’ve put in quality control on the ground just to monitor and validate that information."

Roe also warns that it is critical to keep in mind the human element and not to become over-enamoured with technology. "However, one of the risks with this level of visibility is that it can lead to ‘over-responding,” he warns, "where an excess of data leads to action that may be unnecessary or disproportionate. Judgement and patience in terms of being able to understand the difference between a trend and an event is critical, and really reinforces the need for a trained and experienced decision-maker at the heart of your ‘war room’.

Bryson also warns that you need to have redundancy as he believes “a core weakness is related to convergence - convergence of process, convergence of technology and over-reliance on systems that if any of those systems fail, your supply chain is heavily disrupted.... You need an alternative system in place, so if the main system goes down, you can still operate and you can still survive."

We were able to save close to $2 million for a single customer that had urgent shipments during the COVID disruption," through having a spread of intelligence tools explains Alzamora. “We relied on visibility of both ‘Maersk managed supply chain services’, as well as ‘from other providers’, which we did primarily through the use of technology.” This allowed them to know “exactly where the goods were across the supply chain, and how to plan for the transitions along the way.

Agility in inventory management and deployment

“Speed, agility and sustainability are our primary focus,” said Liz O’Neill, EVP & President, Product, Innovation and Supply Chain for Levi Strauss & Co., at the Retail Supply Chain USA 2020 event. “Because of the trends that are accelerating across the industry, and across the world, frankly, we’re also having to accelerate our transformation,” she noted.

Perceived sources of supply chain vulnerability among business leaders

“Judgement and patience in terms of being able to understand the difference between a trend and an event is critical, and really reinforces the need for a trained and experienced decision-maker at the heart of your ‘war room’.”
A large part of this is “really looking deeply at our planning and inventory management”. This has involved building in AI (artificial intelligence) to help across different phases, including “leveraging AI to give us what we call a ‘Smart Start’ from a forecast perspective”, which has improved accuracy over human-only demand forecasting. “We feel like as we feed it more information, it’s just going to get better and better, so we’re we are looking at the whole go-to-market process,” she noted.

Alzamora thinks that there can be considerable advantages for a company that digs deep into that process and shortens its supply chains through close integration with suppliers and potentially including some degree of near-sourcing, supporting a “strategy of systematically lowering their inventory days, positively impacting their cash-to-cash cycle”.

Alzamora notes that although this type of flow requires robust forecasting of the type O’Neill is investigating, moving towards shorter chains has advantages in terms of cost and exposure via reductions in the time it takes from design-to-store for certain items.

It is worth mentioning just how long lead times can be in traditional models and the risk that imposes, especially in rapidly developing situations like those of 2020. In traditional models, there can be, for example, six weeks of shipping time from production centres in Asia to the destination market, and potentially more in difficult circumstances. Then, if you are putting in a purchase order for a new product there is likely to be the same timeframe again in terms of preparing production for the new product even in a relatively quick procurement system.

This means “you might reach the market a bit too late and that can ultimately translate into lost sales or to a need to sell products at a discount. Then to ensure not to miss-out on the demand peaks, the common answer to balance the slow supply chain is to add extra buffer stock that, over time, will also add extra financial risk”, says Alzamora.

Then events may accelerate past that ship on the water and, when goods land, the market is in very different shape. Fashion brands found themselves with inventory rapidly piling up in warehouses at the height of the crisis and with even more inventory on container ships headed to market in Q2 2020.

Alexis DePree, Chief Supply Chain Officer for Nordstrom, also noted that the COVID-19 crisis had accelerated the need for agility in their inventory management and distribution. “Our business did a hard shift to being 100% digital”, causing it to suddenly reorient their stores from a point of fulfilling 20% of their daily orders from in-store teams, to then “drive that store fulfilment percentage up over 50%.”

This was “a great capability for us to unlock, but it required a new level of partnership and integration between supply chain inventory management and stores”, meaning upping the levels

**CASE STUDY: Agility from short supply chains in the pandemic**

Immediately after the pandemic broke “there were a lot of cancellations,” notes Suzanne Farid, Head of Supply Chain at activewear company Terez.

However, as a smaller business which had traditionally sourced much of its product domestically, they were able to rapidly reposition, looking at “direct to consumer business”, being able to “capitalise on a small run for a particular branding moment,” and undertaking “a lot of collaborations with different types of companies, which might require quick return products. So, we have been able to execute quite a few collaborations using domestic resources as opposed to China. It helped us in the interim.”

She thinks “using domestic resources strategically is really important,” as it gives you an advantageous ability to “make decisions closer to when things happen, and … you can turn things [around] quickly.”
of partnership, transparency, [and] unified planning, [including building in their] off-price stores, our rack stores, [which] did not have store fulfilment capabilities coming into this year.

The lesson is to be able to adjust rapidly and have the planning capacity in place to consider the worst and react accordingly.

**Setting up a new source**

There’s no way around it, if you want to avoid being suddenly caught out in your supply chain, you need to do your homework on your suppliers. Setting up a new partnership needs to be done thoroughly.

“It’s just about undertaking that research upfront,” says Davies, “understanding where they’re located, understanding their capabilities, looking at doing quality control, starting with small runs, as opposed to investing large runs and then hacking any issues, understanding where they’re located in terms of the infrastructure and how that fits into your supply chain. Those sorts of things are important.”

McRaith advises to take an approach of bringing tried and tested partners with you to a new location to make a collaborative effort. “What you do is you don’t go and look for new partners. What you do is you take the best of the existing partners that you have in China, India, Sri Lanka, Indonesia, whoever they are, and have the same vision as you, and you go there together. As long as they know you’re with them, they will absolutely set up best in class facilities for you. What you’re doing is you’re taking out variables. In the past, the variable was a new country, new people: They don’t know who I am, we don’t know who they are. Now you change one variable: The location. All other variables remain constant, and therefore you can move so much faster than we ever used to in the past, just through those great partnerships.”

Davies, Ki and Farid all argue that having local knowledge on the ground is important both for the set-up and for continuously managing suppliers in developing countries, especially when personal visits are restricted. “For those who are sourcing in a country like Vietnam, we would recommend that they consider having a representative office and be able to employ people on the ground,” advises Davies. “I think if you’re trying to set up a new relationship and negotiate from outside of the country, with new manufacturers you have not worked with before then that’s...
Rebalancing supply chains for an agile, resilient and sustainable future

“...going to lead to issues, whether that’s around negotiating payment terms, managing the quality, or ensuring it’s done correctly, it does help to have presence in the country.”

He also advises that customs in a developing country “can be problematic, and so working with a logistics company or agent, like a 3PL, who can provide support is going to be important to navigate the more grey areas,” in developing countries.

Managing a multi-layered supply chain

As noted earlier, it is critical to be prepared, have very clear lines of communication and visibility over suppliers when aiming to manage an international supply chain operation effectively. This needs to be supported with data gathering, alongside analytics and forecasting.

"Most important when it comes to the effective management of a complex supply chain is empowering a decision-maker, or a team of decision-makers, to act across the organisation," says Roe. "It might be that the decision-maker is a small team, but it is an essential role as visibility and control mean nothing without action. Ideally, the decision-maker will have cross-functional knowledge and exposure, as disruptions and shocks can come from many different areas, and demand different areas of expertise."

He believes that “the people that work in this area have to understand the supply chains they’re looking at, and they have to be highly numerate in terms of understanding what the data tells them, and cause and effect. Analytical skills become incredibly important, allowing for the proper understanding and powerful application of the insight generated from data sources."

It is also a case of bringing a flexible mindset into the management process, being strategic and building relationships with key suppliers. "I think that flexibility and responsiveness of supply chains will continue to become more of a priority over time," says DePree. "Supply chains of old, were designed for scale and cost and repeatability, and those elements still matter, but the importance of flexibility I don’t think can be understated at this point in time. The change curve is much faster and more dynamic and … so I think we need to view that as the new normal and start to adapt and get ready for that."

This covers not just the suppliers themselves but also how you handle inventory after it leaves the supplier. During the first half of this year Terez looked at staggering its inventory: "We were looking at ways that we could, if needed, split the shipment, so that we could have some units in house and get that product launched, but then have the rest of the inventory come in a little bit later," so that sales matched inventory more closely, cash flow could be improved and they could create a transportation mix that worked in their favour. “With the airfare situation and prices being at a peak … it’s a huge impact to the bottom line”, to move goods this way, explains Farid. "It’s really been managed case-by-case, almost style-by-style to see who needs what, when, and how, and if there’s a way of receiving that later … then we can do so and vice versa; things that we can’t afford to come in any later, then we have airfare, accept the cost for what it is and move on."

Like Barriball, Farid advises to dig down into your suppliers and their operations. "I find you have to train your vendors to share a lot of the details…. A lot of them seem to have been almost conditioned to only share the final outcome and figure out all of the details in between…. I just find that in crisis management, it’s even more important [to go further, as] there’s so many things that can be done or managed when you know. If one fabric is late you can help the suppliers maybe reprioritize, or pivot something that they’re working on if it can end up being more beneficial for your business. This is particularly important in a smaller size company, where your market is primarily direct to consumer and so you might have more flexibility."

In the longer term, Bryson would like to see a more thorough and structured approach to risk assessment. “The first learning mode would be that if you are a company with a set of supply
Rebalancing supply chains for an agile, resilient and sustainable future

chains, what you should have is an alternative team that is exploring your supply chains, but one that is not fully linked into the actual management and the operational design and configuration of the design of that supply chain. What that alternative team should be doing is imagining failures [as] we need more scenario planning to identify disruptions to supply chains to try and work out resilience investments that would need to be made now, rather than during that particular moment of crisis.

**CASE STUDY: Putting products in every lane**

For PVH, they sell products in 123 countries and move an estimated million and a half units every 24 hours from production bases in more than 50 countries. This requires a considerable operation with inbuilt flexibility.

To handle this “We have three levels,” says McRaith. Firstly they have “low/slow”, “where we’re doing commodity items – basics – where speed is not critical, but inventory accuracy is critical and inventory cost is important.” He gives the example of a standard Calvin Klein white shirt. Demand for this is predictable and the product is generic, so they can look to focus on sourcing this from “from overseas locations that are relatively low cost, but efficient, and with our best suppliers.” He is at pains to point out that even at this level they do still look to compress lead times “through staging models,” so it takes a few months from placing purchase order to product arrival.

Then their mid-tier level moves production closer to the end market to try and cut out inefficiencies and introduce more adaptability. This is their “high-fast model”, which is near shore, “although our mind is migrating more to onshore not near shore, because we think the near shore is getting squeezed. This segment can react very quickly on relatively large quantities of fashion items, so you’re much more accurate.”

“In the old days, you’d take a big bet,” on your upcoming lines and then have to hope says McRaith. “All you know, when you place that bet, is I got that bet wrong. The question is, how wrong did I get it? I either make too much of the stuff they don’t want, in which case I’ve got huge markdowns and waste thrown in the trash, or I’ve actually sold out quickly of the stuff they really do want, and I’m losing all this profit margin.”

Instead, “there’s a rethink that you have on now, which is how do I just make enough to test what the customer wants? And then once they tell me what they want, how do I instantly react to that in a few days or a week? How do I turn on a supply chain and start to flow the goods?”

This mid-tier is designed to handle this load and rapidly scale from nearby production centres so that supply can be tailored specifically to demand.

Finally, they have their ‘Express’ model. “At Express modelers, you can order a garment, customize the exactly the way that you want to, and you’ll get that item and 48 hours, right and sent to you,” which is an increasingly important segment in a world of commoditised fashion and fast delivery demands.

For PVH, “We believe you have to have a supply chain capability that plays in every single level. The key to that is that you’re not playing with three different players. It’s not one vendor doing the low-slow, and a different vendor doing the nearshore, and a different vendor doing the Express. It’s the same vendor who’s actually doing all three, they’re managing and turning those dials to meet those requirements. One of our mantras is that global companies need global suppliers, and so all our top suppliers have actually built a global footprint.”
Chapter 4: Supporting sustainability

When it comes to supply chain resilience, sustainability is not always mentioned in the same breath but the two do, in fact, go hand-in-hand. The companies putting sustainability alongside other top priorities as part of their planning process are the ones that are finding themselves better placed to weather whatever 2020 can throw at them.

The fundamental fact is that sustainable business practices in supply chains increasingly dovetail with efficiencies, resiliency and the ability of a business to respond well to trends in their end market.

These advantages can take a number of forms. Finding alternative sources of raw materials or different materials altogether means less reliance on a handful of suppliers and may mean that the raw material itself requires fewer resources to produce. Taking into account social responsibilities means you are more likely to be choosing suppliers that are reliable and financially sound. Shortening supply chains to reduce carbon footprint will mean you are now closer to the end market and can introduce more agility to production and more tailoring to that end market.

Bryson notes that in one of their ongoing pieces of research, they have a panel of 300 American firms that have a wide mix of manufacturing models, from manufacturing domestically only to globally dispersed production, but what links them is “they’re all shifting away from a focus on supply chains that are there just to strip out costs and to maximize profits” and towards sustainability and environmentally friendly and socially sustainable models. “The interesting thing about these 300 firms is they’re all incredibly profitable, but none of them would sit in a standard account of how you should set up and run a supply chain.”

We need to stop thinking the future of supply chains will be about sustainability. That future is here, now, and companies need to wake up to this reality and buy-in.

Reshoring and shortening

Furthermore, Alzamora notes that “there is a growing trend of consumers that are actually interested in this sustainability aspect and turning their attention towards sustainable brands. As the pressure from fashion consumers increases towards more sustainable products and practices, many fashion companies are acknowledging that if they do not become more sustainable … they could lose out on the demand”.

Part of meeting this demand is shortening the supply chain, which is where nearshoring and reshoring can play a role.

Firstly, and most obviously, this can be used to reduce the emissions needed to transport goods, an area that is set to become more important given how COVID-19 has revealed some of their flaws, but also, in the longer term, because of increased scrutiny on transportation emissions. For example, the EU voted this year to include shipping emissions in their Emissions Trading Scheme, which will raise costs for heavy polluters.

Those shipping will need to factor in transportation costs and risks more highly in the future, putting a greater emphasis on accounting for carbon and the potential for a dislocation to upend their supply chain. For example, even though airfreight remains the fastest way of transport broadly speaking, it has the highest carbon cost. During the height of the COVID-19 lock-downs, airfreight market capacity was also cut drastically and while many were forced to take up airfreight to move critical goods over very long distances, those that had looked at rail freight pre-crisis (possible in specific routes) were able to move to call on this alternative instead.
Though we have seen a **big rise in intermodal transportation** over 2020, it may well not be enough and we can't ignore better solutions. But the question for many companies is then, how to marry their ability to be fast-to-market with their sustainability strategy?

“If you want to be fast to market, as well as more sustainable, there are alternatives in certain long-haul corridors, for example that of the intercontinental rail from China to Europe, which Maersk is providing to many customers, some of which load complete block-trains”. Another alternative available from most near-sourcing locations is to do “intra-regional short sea shipping as an alternative to cross-border trucking which will certainly have an impact towards lower emissions for those finished goods flows”, explains Alzamora.

Additionally, on a resilience level, shortening supply chains and time-to-market allows greater agility, with lower lead times allowing more flexibility and reduced risk, especially in an environment where demand has and will continue to rapidly evolve. “What we’ve learned is that the industry needs to be nimble,” says Herman in reference to the fashion industry. For example, “what’s happened during the coronavirus pandemic is, first, people are buying differently…. They’re not buying things they used to buy. They’re not buying business clothes or business shoes, dress shoes,” in the same quantities as before and instead “they’re buying casual, comfortable,” a trend that you may not have been able to react to with six-week shipping times between continents as well as additional time needed to change production lines.

Bringing production closer to end-market and then using short-sea shipping is also likely to result in some of the shortest distances between cost-effective production areas and the end market.

**CASE STUDY: Creating world-class sustainability at scale in East Africa**

For many, especially those looking to produce and ship large numbers of units, Africa remains a place to be wary of, if indeed it is even considered at all. However, for PVH it was a chance to start afresh and take advantage of competitive labour alongside new production processes.

For McRaith it was important to ignore the naysayers, especially “The people that will tell you, why they can’t compete with China; China’s just so efficient, Africa will never be that, right? Well, they are the exact same people I spoke to when I left the UK to go to China, and the number of people that told me that China would never be able to make products for the UK.”

By putting sustainability at the heart of their operations in Africa, they were able to build a world-class facility and prove the doubters wrong.

“When we went to Africa, we thought about how do we make sure buildings are built to international standards? How do we make sure human rights compliance is at the forefront of everything that we do? What does our footprint look like when we’re physically there in terms of water and energy use? And so we built what, at least at the time and probably still today, is Africa’s largest zero liquid discharge facility … that ensures all the water just goes round, and round and round. The only loss of water we have is on evaporation.” The industrial park where the facility is cited also derives 84% of its energy from renewable sources.

This allowed them to overcome the harsh conditions and fragile environment, while moving production closer to the end market and operating production at a lower overall long-term cost.

“I think one of the things that, as a company, we’ve got our head wrapped around is that sustainability, the consumer, making money and doing right by people in the supply chain are no longer separate things that you have to think about separately.” No longer do you need to “check the box on one or give up something on one to get the other,” exhorts McRaith. “Effectively they’re all linked. Sustainability drives speed, drives efficiency, allows you to respond faster to the consumer, and so all of that was brought to our thinking in Africa.”
bearing in mind the vast majority of the world's largest cities are close to water transportation routes and the majority of the most economically productive regions globally sit on or near coast lines. This reduces the type of risks we have seen from transportation disruption in the COVID-19 crisis and is set to be favoured by a variety of bodies, such as the New York Department of Transportation and the EU, which is investing in infrastructure to support water transport.

**Materials security and sustainability**

Materials are also an area where sustainability meets resiliency. Materials that are more sustainable tend to come with lower risk factors and better availability. There are numerous examples of this from the high-end materials used in complex electronics, to the materials used in our clothes.

O’Neill notes that Levi Strauss is also looking at alternative materials to supplement cotton and “working on … what our consumer needs from us sometimes even before they know they need it…. Recently we launched cognized hemp in our products, and most of our products are made from cotton right now, but hemp is actually a crop that can be cultivated using less water and less chemicals. From an aesthetic point of view, when you think of hemp, you think of sort of a scratchy, not incredibly inviting fibre, but the design teams and the supply chain teams were able to work together to find a way to ‘cottonise’ the hemp. So, now we have fabrics that are a blend of cotton and hemp that actually feel wonderful… We do feel like it’s a scalable solution for the future; we’ve actually started to put it into our main line this year.”

Similarly, Ki notes that they are using this crisis to try to pivot to new material sources. “We are now trying to shift into using supima, which is American grown cotton”, in order to try and bring some production back into the domestic market.

These examples underline how materials security, cost and sustainability can align, and it will become more important as climate change affects the structure and nodes of production we are used to. Supply chain and procurement managers will need to become more agile and conduct thorough risk assessment based upon long-term sustainability to achieve maximum effectiveness going forward.

**CASE STUDY: Design innovation and reducing waste**

Levi’s is trying to marry innovation in design with sustainability goals, with a “platform [that] allows us to look at our jeans in a photo-real rendering. What the designer sees on the screen of their iPad looks exactly like what the finished product will look like, even though we’ve never actually even made a prototype,” says O’Neill.

“The ability to have that image and have that software-to-hardware connection has unlocked huge possibilities for us. It’s not only enabled us to speed up our development process and really eliminate a lot of waste from our development process, as we don’t need as many samples along the way, but it is also having big impacts on our supply chain and on our overall operating model, because we’re able to reduce our lead times overall, really get our forecast accuracy better, postpone our commitments to final products until much, much later in the game, which of course has fantastic impacts on the whole margin equation for the company. So, we really sort of doubled down on that and made sure that we were looking at every avenue we could.

“Even though it was something that started with sustainability, it’s ended up in this big operating model shift…. It’s a very broad transformational process. It really impacts almost everyone within the product ecosystem from design all the way through to our commercial sales partners.”
Conclusion

Ultimately, supply chains are a complex balancing act. Each organisation is constantly weighing up shifting push and pull factors when considering where to source and how to move their products.

What we are currently experiencing is an accelerated need to reappraise and adjust those calculations, brought forward and boosted by COVID-19. Already ongoing trends in shifting production centres are now a priority for many looking to enhance resilience. Investment into, and focus on, visibility has stepped up as boards zero in on how important it can be to deal with disruption and cut costs. New transport links are being studied and tested. Similarly, sustainability has risen up agendas, as companies with sustainable footings have been better placed to weather 2020.

However, adjusting a supply chain is no easy task and moving production can be hampered by quality, cost and speed issues, with finding a new supplier and linking them into a global logistics train frequently challenging. Furthermore, the overall costs within a supply chain, both monetary and in terms of emissions, are not always clear and have to be balanced with the speed of getting goods to market.

Supply chain managers therefore need to focus on getting a top-down, integrated view of their supply chain, its associated costs and its potential weak spots as a matter of utmost urgency. Rather than undertaking a knee-jerk reaction as a result of the twists and turns of 2020, organisations need to gather the data, work with their suppliers and consider the complete supply chain to understand their next move. This is especially so if they cannot move production closer to their end market and rely on long-distance supply chains to remain cost-effective and competitive and so need to understand what is happening within supply chains as early as possible.

For many though, the next step will involve shortening the distance between their factors of production or final assembly and their destination in order to achieve resilience, to adjust rapidly to changing market conditions and to handle increasing calls for openness and sustainability in supply chains.

These calls for greener supply chains come from both within organisations, from government and, increasingly from consumers. “As brands become increasingly conscious of sustainability in relation to their supply chains, this is a factor that should be considered when it comes to sourcing strategies. The conscious consumer will continue to increase their demands for sustainable fashion and with so much choice in this market it is a risk for a business to leave sustainability at the bottom of the priority list,” says Alzamora.

It’s time to reconsider the supply chain. It’s time to move beyond pure cost. It’s time to think about how to balance our supply chain priorities. It’s time to structure them so they are sustainable and resilient not just against small changes, but so they can withstand and thrive for the next 20 or 30 years.
About Maersk

A.P. Moller - Maersk is an integrated transport and logistics company. Connecting and simplifying trade to help our customers grow and thrive. At Maersk, we help the lifestyle industry with seamless solutions, led by experts who understand the unique requirements and standards of the industry. We leverage this knowledge to build our supply chain solutions around customer needs, allowing us to serve some of the world’s most visible brands.

The Maersk team works together with customers, living their strategy. Combining three of our big strengths; robust processes and systems; an integrated, global, technology platform; and most importantly some of the finest, most experienced minds in supply chain management. This feeds into planning, execution, and optimisation of cargo flows, documents, and information across supply chains.