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Despite all of our hopes for a post-COVID future, in 2022, the world did not return to normal.

At the end of 2021, the prognosis for the supply chain industry—and the economy at large—looked good. According to the <u>International Monetary Fund</u>, the global economy grew 6.0% in 2021, rebounding from the COVID-19 shutdowns of 2020. Experts were predicting the rebound would continue.

In 2022, however, new disruptions slowed this recovery significantly—the global economy only grew 3.2% during the year, according to the IMF, even as global inflation rose 8.8%, pushing up shipping costs. As the global supply chain has continued to feel the aftershocks of national and regional pandemic shutdowns, a series of localized crises have hit: the Russian war in Ukraine and the resulting energy crisis, growing tensions between the U.S. and China, and climate-driven emergencies in Europe, Australia, and North America.

Shortages of trained drivers, not to mention materials as diverse as food ingredients and shipping containers, have exacerbated the effects of all of these impacts. According to a 2022 report from Interos, supply chain interruptions have cost companies an average of \$182 million in lost revenue this year. The delays and empty shelves that customers grew used to seeing during 2020 haven't gone away.

Yet there is an upshot to these continuing challenges: By revealing the cracks in the global supply network—all at once—the past two years have spurred a period of tremendous change and transformation. "The global supply chain remains completely out of alignment," says Lisa Anderson, president of LMA Consulting Group. "Yet it continues to evolve as companies change strategies in reaction to what's going on or to get ahead of future changes."

In 2023, we're beginning to see the effects of this rapid innovation. New technologies. New relationships. A new spirit of nimbleness. These changes may, in fact, prepare global supply chains for the disruptions that climate change may bring in the coming years.



"The need for a more resilient supply chain is the key learning I see right now," says Marcell Vollmer, CEO of the Prospitalia Group, which provides procurement, analytics, software solutions, and consultancy services for the healthcare industry. "We have seen what can happen due to a lockdown in China—but also how a single ship stuck in the Suez Canal can interrupt a global supply chain."

Cost and efficiency are no longer the primary polestars for supply-chain professionals; exposure to risk and interdependencies must be taken into account. One strategy that many companies are increasingly relying on in order to build resiliency: stress-testing their supply chain. "Companies need to map out the various ripple effects that could affect them, and then determine how likely these possible disruptions are and how they can prepare for them," writes Martijn Lofvers, founder and CEO of Supply Chain Media, in a <u>June 2022 article</u> about the effects of Russia's invasion of Ukraine. Companies must assume disruptions will come from many different directions, then do their best to predict the predictable and imagine the unpredictable.

Maria Villablanca, cofounder and CEO of Future Insights Network, argues that building resiliency into your company's supply chain takes more than planning for different kinds of shocks. "It is time to redefine the supply chain from a linear process to a more dynamic ecosystem approach," she says.

In 2022, we're beginning to see the effects of this rapid innovation. New technologies. New relationships. A new spirit of nimbleness. These changes may, in fact, prepare global supply chains for the disruptions that climate change may bring in the coming years.

For LMA Consulting Group's Lisa Anderson, building a dynamic ecosystem approach means taking measures such as sourcing backup suppliers, adjusting the company's manufacturing footprint, and adopting digital technologies that facilitate dynamic modeling.

These digital technologies can build resiliencebut, as the past two years have demonstrated, so can investing in the human aspect of the supply chain. Many supply chain professionals have found resilience to come from the relationships they have built in their industries, as well as up and down the supply chain.

"Supplier partnerships are important," says Donna Palumbo-Miele, founder and CEO of Concordia Supply Chain Group, a strategic consultancy. "Engaging in strategic sources of supply partnerships can drive collaboration to mitigate potential business challenges including having established contingency plans in place."

Acting Globally And Locally

An increasing number of companies are building their resilience by reshoring or nearshoring. According to an <u>August 2022</u> <u>article in Supply Chain Movement</u>, a recent survey jointly conducted by Supply Chain Media and Buck Consultants International revealed that 60% of the North American and European companies surveyed are considering bringing some of their manufacturing back from Asia.

Adopting a hybrid global-local model can strengthen relationships and avoid supply-chain disruptions. As Lisa Morales-Hellebo, CEO of REFASHIOND OS, says, "The pandemic has underscored the urgency for us to refashion globalized supply chains to localized demand chains within the largest consumer markets."

For its part, Prospitalia's Marcell Vollmer calls this approach, which places a stronger emphasis on regional hubs and local businesses who can travel smaller distances when delivering supplies, "glocalization." The benefits, Marcell says, don't stop at mitigating risk. They diversify the supply chain and reduce the overall greenhouse-gas

Don't Wait To Invest In Talent

Several experts we interviewed this year called for the supply chain industry as a whole to invest in a very human aspect of our work: young professionals. Our profession is critical to the global economy, shares Donna Palumbo-Miele. Having a positive impact on the profession includes developing the talent within companies.

Maria Villablanca stresses the urgent need to build a bigger pipeline for young talent—especially in a quickly changing global environment. "If the industry doesn't do more to paint supply chain [management] as an exciting, viable career option to new grads and people from diverse backgrounds, we will see the same people coming up with the same solutions to different problems."

Unprecedented Change

If you'd like to read the 2021 edition of Warner PR's report on the state of the supply chain industry, which includes insights from Sheri Hinish of Supply Chain Revolution and Philippe Gautrin, formerly of Generix Group, download it for free here.



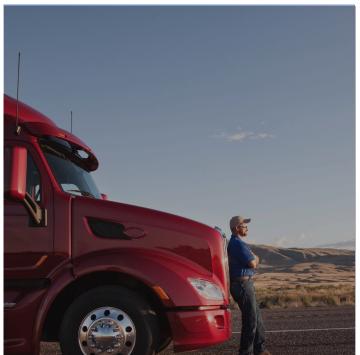
Technical Innovations That Build Resilience

Emerging solutions in the field

When the economy has slowed and new events that impact the supply chain may seem to appear around every corner, it may be hard for supply chain professionals to make the case to company executives that they should make major investments in new technologies. Yet some of the most exciting innovations that companies are putting into place right now promise to improve every aspect of the supply chain, from building dynamic sourcing models to improving customer satisfaction.

In fact, more and more end customers are expecting to see technological progress, argues Sarah Barnes-Humphrey, founder and host of the Let's Talk Supply Chain podcast. "There will be an ever-growing focus on digitalization and last-mile expectations from consumers," she says.

Some of the innovations that the experts we spoke to called out for their effectiveness and future promise:





New Visibility Tools

According to Marina Mayer, editor-in-chief of Supply & Demand Chain Executive and Food Logistics, "Providing any course of action for drivers, warehouse managers, even consumers, in a real-time manner is key to tracking and tracing products of all kinds through the supply chain. Many of the visibility tools on the market take the guesswork out of the equation. These tools provide factual information, and honestly, that's the best kind of customer service any company can provide."



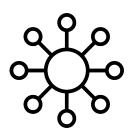
Supply-Chain Digitalization And The Internet Of Things (IoT)

"Digitalization of our supply chains represents the single largest operating system to ever exist," argues Lisa Morales-Hellebo. "Thanks to cyberphysical systems, IoT, beacons [wireless, battery-operated sensors], and genetic markers within raw materials, everything can now 'speak' with everything else."



Digital Twins

"A digital twin allows you to visualize and evaluate changes to your supply chain so that you can better serve customers, grow the business, increase profitability, and accelerate cash flow," says Lisa Anderson.



Omnichannel Distribution

Dave Anderson, managing general partner of the early-stage venture capital partnership Supply Chain Ventures, hails "the emergence of omnichannel distribution, whereby customers can receive product from many possible channels—retailer ecommerce/ stores, drop-ship from manufacturers or distributors, third-party suppliers overseas, and the like."



Artificial Intelligence (AI)

"The use of AI and machine learning in predicting demand is rising," says Maria Villablanca. "Demand-sensing technology will allow supply chains to be better prepared in dealing with volatility."



Guest Article

The Top Three Things Supply Chain Leaders Need To Know In The Age Of ESG

By Noah Miller Rho Impact

In the last couple of years, we as a global society have faced unprecedented environmental, social, and economic challenges. The multifaceted impacts of the COVID pandemic, the environmental destruction from wildfires in Australia, and the Russian invasion of Ukraine are just a few examples. According to a 2022 Accenture report, these events impacted every stakeholder, supply chain, and industry worldwide. Our global citizens experienced empty shelves in grocery stores, a lack of critical medical equipment, and a shortage of daily necessities. These disruptions demonstrated the fragility of global supply chains and the need to develop a new model for sourcing and supply chain management.

In addition to operational disruptions, significant shifts in consumer preferences and employee expectations have encouraged companies to modify their supply chain management to comply with evolving human rights and environmental standards. Given the current volatility and associated risks companies are grappling with, it is crucial that organizations adapt their supply chains to reflect these new market realities and pressures. Integrating environmental, social, and governance (ESG) standards into your supply chain management can bridge the gap between today's stakeholder expectations and tomorrow's market realities.



What is ESG, And Why Is It Relevant To My Supply Chain?

The ESG framework assesses how a company manages the risks and opportunities created by shifting market conditions and stakeholder expectations. Using ESG as a core driver of your business model allows you to create and sustain long-term value in a rapidly changing world. Operational risks can also be reduced while enhancing strategic and financial opportunities. ESG has become a necessity for public and brand-name companies as emerging ESG disclosure regulations are going into effect in all major markets worldwide. For this reason, ESG has become a leading priority for companies of all sizes and in every industry. Supply chain management presents some of the most critical ESG risks and opportunities to navigate.

In its <u>2022 Annual Global Supply Chain Report</u>, Interos found that, on average, organizations lose \$182 million annually due to global supply chain disruptions. ESG aids suppliers in addressing these ongoing issues through strategic, financial, and operational lenses. The ESG framework emphasizes better monitoring and maintenance of environmental and social conduct along supply chains, mitigating associated risks and disruptions. Issues such as human rights adherence and labor management, as well as greenhouse gas emissions and environmental performance are identified and addressed preemptively — reducing the likelihood of reputational and operational crises as they relate to your suppliers.

Three Things Every Supplier Must Know About ESG

As mentioned above, supply chains represent the bulk of an organization's emissions footprint as well as most of their associated environmental and social impacts. Supply chain leaders are in a unique position to leverage their ESG efforts as a tool in reducing the collective impacts of their downstream buyers while also standing out in the procurement process. Given the range of environmental, social, and governance risks and opportunities the supply chain presents, here are the three things every supplier must know in the so-called Age of ESG:

1. New Regulations = New Normal

In 2021, the U.S. Securities and Exchange Commission (SEC) published its <u>proposed rules for Enhancement and Standardization of Climate-Related Disclosures</u>. Within these guidelines, both public companies and ESG funds must include clear and consistent disclosures on how they are integrating ESG into their strategies, risk management processes, corporate governance, and stakeholder management. As public companies look to quantify and disclose the environmental and social performance of their supply chains, suppliers with explicit ESG policies, practices, programs, and performance data will stand out to both investors and their clients, who may be looking to comply with emerging disclosure regulations.

2. ESG Is A Competitive Advantage In The Procurement Process

According to a McKinsey report on sustainability and the supply chain, as much as 90 percent of greenhouse gas emissions and other environmental impacts are the results of companies' supply chains. Active supply chain management is an inherent requirement for reducing a company's Scope 3 emissions and achieving Net Zero. As companies begin to make audacious commitments to Net Zero, Net Positive, and other long-term ESG goals, suppliers who can actively support these efforts by minimizing their own emissions will have a competitive advantage as companies begin to integrate ESG criteria into procurement processes and RFP requirements.

3. Human Capital Matters

Events in the past few years have revealed how social issues can influence stakeholder expectations of a company's approach to human capital management. Movements like #Metoo and Black Lives Matter are just a few examples that have impacted the corporate world. These trends compel institutions to revisit and reevaluate their human rights and labor management practices—in other words, reassessing and reprioritizing the "S" in their ESG practice. Suppliers are not exempt from these efforts. Within every supply chain are some of the most significant risks regarding human rights violations. Child labor, wage rights, equitable hiring practices, and safe working environments are all challenges companies must account for along their value chain.



ESG Is The New Normal For Supply Chain Management

Strong ESG engagement gives suppliers a license to operate and a competitive advantage when working with public-facing brands. It also helps limit harmful exposure from lawsuits and associated losses, as Nike experienced in the 1990s after being sued for child labor in its factories.

Moreover, ESG is an essential component of modern corporate talent management. Millennials and members of Gen Z, who will comprise most of the workforce by 2025, view ESG as an absolute necessity for becoming a customer or employee of a company. Employees indicate that they are more likely to stay at a company that is responsible and accountable for its impact. Suppliers, like all entities in the Age of ESG, should view ESG as a critical component of their talent engagement, retention, and effectiveness.

Supply chain management presents one of the greatest leverage points for mitigating a company's environmental and social impacts. It also offers one of the greatest opportunities for reducing costs, increasing efficiencies, and ensuring long-term stability in a rapidly changing world and marketplace. Focus on integrating ESG into your supply chain practices today so you can be prepared for the realities of tomorrow.





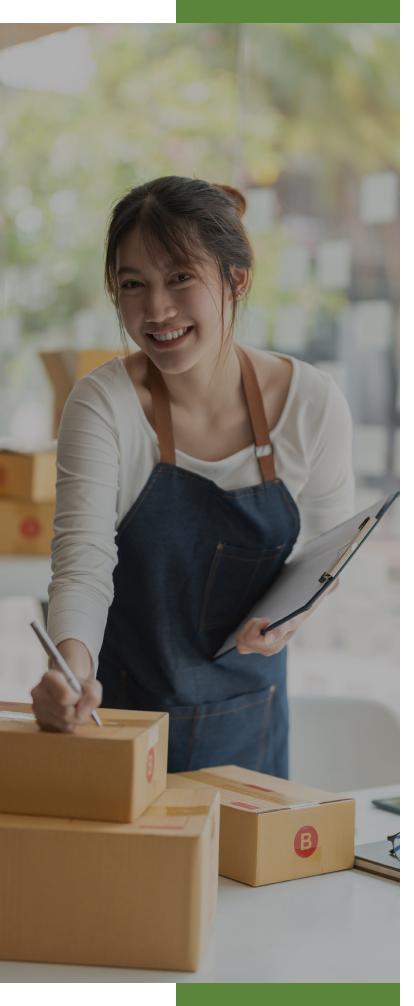
As Noah Miller shares in the guest article above, closely monitoring sustainability and other ESG issues at every step of the supply chain offers a competitive advantage for supply chain managers when attracting clients.

And as Sarah Barnes-Humphrey, host of the Let's Talk Supply Chain podcast says, ESG is top of mind for many people in the industry. "The willingness to collaborate and have discussions around sustainability and DEI," she says, is one of the most impactful innovations she's seeing across the field. According to the results of a 2022 IBM-Celonis survey of chief supply chain officers, slightly more than half of respondents said they would be willing to sacrifice 5% of their profit toward improving a range of sustainability measures. Many reported that their companies are already working to reduce their use of virgin or single-use plastic, reuse materials, and invest in zero-waste services.

At the same time, argues Supply Chain Ventures' Dave Anderson, one of the biggest blocks for supply chain companies may be their end consumers, who talk up their interest in sustainability but make purchasing decisions based on convenience. "The emergence of 'instant' consumer delivery (think Gopuff), made possible by very flexible supply chains, imposes huge costs on our planet in terms of more emissions and economic inefficiencies," he says.

And Lisa Morales-Hellebo also cautions that some companies, too, talk up their ESG strategies without making real investments in reducing their environmental impact. She cites a 2020 BCG and Fashion For Good report calling for transformation of the fashion industry: "We should be deploying \$20 to \$30 billion just in early-stage fashion supply chain innovations every year between 2020 and 2030 for the industry to hit the sustainability goals they have set for themselves," she writes.

Clearly, there is work to be done. One bright spot may be the increasing turn toward digitalization and the deployment of supply chain visibility software. As Jett McCandless, CEO of project44, wrote, digitalizing the supply chain to maximize flexibility and efficiency can help supply chain companies strike a balance between sustainability and customer convenience. The World Economic Forum recently estimated, in fact, that digitalization could reduce greenhouse gas emissions in the industry by 10 to 12 percent.



Final Thoughts

Ultimately, throughout 2022 the industry has shown its strength through all the crises and changes of the past two years. "The supply chain industry is strong, and the people behind these companies are even stronger," says Marina Mayer, editor-in-chief of <u>Food Logistics</u> and <u>Supply & Demand Chain Executive</u>.

Supply chain companies that rush to embrace resiliency will be in the best position to reap the rewards. As Lisa Anderson says, "Only those companies that are resilient, innovative, collaborative, and willing to invest in whatever is needed to remain viable and prepare for the future—even under worrisome circumstances—will thrive."



Expert Interviews:

Marina Mayer

Content Director, <u>AC Business Media</u> Editor-in-Chief, <u>Supply & Demand Chain Executive</u> and <u>Food Logistics</u>

As Content Director for AC Business Media, Marina Mayer oversees all publications within the Construction, Landscape and Supply Chain networks, including <u>Food Logistics</u> and <u>Supply & Demand Chain Executive</u>.

What is one industry insight you have gleaned from the experiences of the last two years?

One thing I've learned over the last couple of years is that the supply chain industry is strong, and the people behind these companies are even stronger. Despite companies having to pivot because of COVID-19 and other supply chain disruptions, sustainability, safety, and efficiency were still top of mind.

What is the most impactful innovation you have seen recently in the industry?

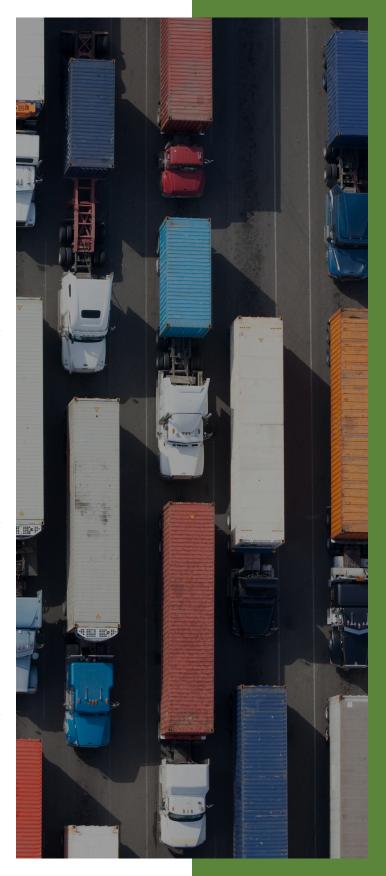
I have enjoyed seeing all the new visibility tools come to market. Providing any course of action for drivers, warehouse managers, and even consumers in a real-time manner is key to tracking and tracing products of all kinds through the supply chain.

How many times, as a consumer, have you wondered how your shipment is lost? It's like seeing that random shoe in the middle of the street. You ask, how does that happen? Many of the visibility tools on the market take the guesswork out of the equation. These tools provide factual information, and honestly, that's the best kind of customer service any company can provide.

What is the greatest challenge the global supply chain must still address?

I feel like there are so many, unfortunately. And I don't think that companies are not addressing them—there are just so many challenges plaguing the industry. It's a vicious cycle that just keeps going, like we're all stuck in a hamster wheel. There's still the driver challenge. The overall product shortage—whether ingredients, microchips, or containers—is still creating havoc in the supply chain. Lockdowns overseas force companies to nearshore.

I don't know the resolution to these challenges. I don't know that anyone in the industry has the insight into what's to come. And that's the overarching challenge. Visibility tools can plan for the movement of product through the chain, but these tools can't predict the future.





Expert Interviews:

Lisa Morales-Hellebo
CEO and Cofounder, <u>REFASHIOND OS</u>
Cofounder and General Partner, <u>REFASHIOND Ventures</u>

Lisa Morales-Hellebo is a seasoned entrepreneur whose company, REFASHIOND OS, and VC firm, REFASHIOND Ventures, are catalyzing the shift toward localized fashion demand chains. She is also cofounder of the Worldwide Supply Chain Federation. In 2022, Supply and Demand Chain Executive honored her as the overall winner for its Women in Supply Chain Award.

What is one industry insight you have gleaned from the experiences of the last two years?

Much of my career has been focused on customization, personalization, and on-demand, localized manufacturing. The pandemic has underscored the urgency for us to refashion globalized supply chains to localized demand chains within the largest consumer markets.

The only constant will be increasing risks to our globalized infrastructure, so no matter the sophistication of your AI, your inventory will always be impacted by increasing costly factors outside of your control. The pandemic is a symptom, but the root cause is the climate crisis, which is causing increasing severe-climate patterns, wildfires, forced mass migrations, and instability. We must create antifragile demand chains that start with the localized resources and raw materials constraints, producing just-in-time or post-purchase across a distributed, collaborative network of vertically integrated partners.

My company, <u>REFASHIOND OS</u>, is deploying this type of network, from fibers to finished goods, starting in the USA. My venture fund, <u>REFASHIOND Ventures</u>, invests in early-stage supply chain innovations across advanced materials, advanced manufacturing, advanced logistics, and data and decision analytics. The Worldwide Supply Chain Federation, which I cofounded with my partner in REFASHIOND Ventures, Brian Laung Aoaeh, in 2017, has helped concretize our insights through our monthly meetups with our global network of more than 4,400 members.

What is the most impactful innovation you have seen recently in the industry?

Digitalization of our supply chains represents the single largest operating system to ever exist. Thanks to cyberphysical systems, IoT, beacons, and genetic markers within raw materials, everything can now "speak" with everything else.

We are at such a critical time in human evolution that our generation and the one to follow will be the stewards of what humanity will look like on Earth. I believe that the most impactful innovations will include a combination of atoms and bits, since we will not decarbonize our planet with software alone.

What is the greatest challenge the global supply chain must still address?

The greatest challenge is the lack of urgency and the lack of capital being deployed into specialized early-stage supply chain funds. The most important innovations are underfunded. That's because limited partners are injecting capital into the same funds that created many of our planet's problems. These funds have now started investing in the supply chain after seeing the opportunity due to COVID rather than because of any specialized knowledge they have developed around the issues that need to be addressed.

My area of expertise lies in architecting the shift from global fashion supply chains to localized fashion demand chains—based on the constraints of localized market raw materials, and just-in-time or post-purchase production. After founding and launching the New York Fashion Tech Lab in 2014, I decided to dedicate the rest of my life to this work because I didn't see anybody taking the reins to orchestrate this crucial paradigm shift.

According to the BCG and Fashion For Good 2020 report, "Financing the Transformation in the Fashion Industry," every year between 2020 and 2030, we should be deploying \$20 billion to \$30 billion in early-stage fashion supply chain innovations alone for the industry to hit the sustainability goals it has set for itself.

There simply are not enough VCs who have the deep passion for or understanding of this space to remotely hit this number. We cannot expect the industries benefiting from their current toxic, extractive, and exploitative



Expert Interviews:

Marcell Vollmer CEO, <u>Prospitalia Group</u>

Dr. Marcell Vollmer has more than 20 years' experience developing and implementing procurement, supply chain, and digital transformation strategies across industries around the world. He is now the CEO of Prospitalia Group, which provides procurement, analytics, software solutions and consultancy services for the healthcare industry.

What was the biggest challenge you saw in the industry in 2020?

Supply chain issues have been made much worse since the COVID-19 pandemic, due to increased shipping costs, material scarcity, and higher energy costs due to the Russia-Ukraine war. Overall, the global economic environment has become more challenging for supply -chain and procurement

experts, who must deal with much higher costs to get needed supplies. In addition, sustainability is being more emphasized for all sourcing decisions.

What is one insight you've seen companies learn from this challenge?

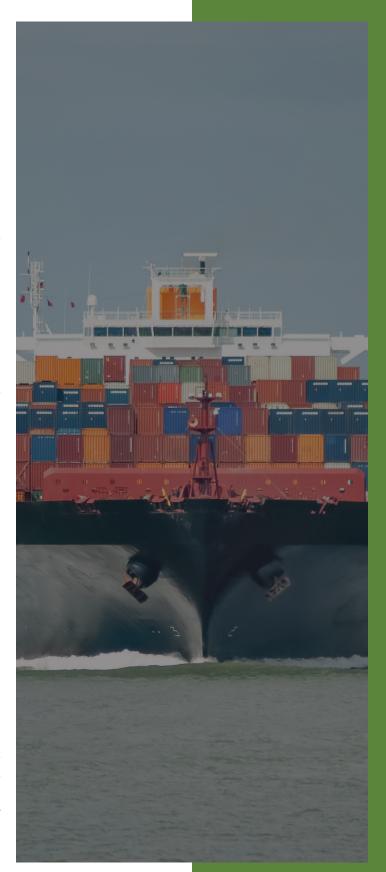
The need for a more resilient supply chain is the key learning I see right now. Companies are looking to mitigate risks due to high dependency from certain suppliers and countries. We have seen what can happen when China calls for lockdowns—but even before that, how a single ship getting stuck in the Suez Canal can interrupt the global supply chain.

Global supply chains that have traditionally focused on getting the best prices by bundling high volumes (or, in some cases, all volumes) with high dependency from suppliers in one country or one region will get more diversified. Customers need to get used to seeing shortages of products on shelves as well as price increases.

What solutions have you seen teams put into place to deal with that challenge?

Prospitalia provides critical services for hospitals so they can secure the treatment of patients. We must be prepared to secure deliveries of all kinds of medical and protective equipment.

One solution we have adopted: glocalization. One way to overcome these global challenges is to combine globalization, and innovations from around the world, with a stronger emphasis on local businesses who can travel smaller distances to deliver supplies. Glocalization can mitigate risks, reduce CO2 emissions, and diversify our supply chain. In addition, digitalization and better access to real-time information can help leverage market insights and allow for early evaluation of risks to your supply chain.



Expert Contributors

We at Warner PR are grateful to the following experts for contributing their time and insights to this report:

Dave Anderson, Supply Chain Ventures Lisa Anderson, LMA Consulting Group

Sarah Barnes-Humphrey, Let's Talk Supply Chain

Martijn Lofvers, Supply Chain Media

Marina Mayer, AC Business Media - Supply & Demand Chain Executive;

Food Logistics

Noah Miller, Rho Impact

Lisa Morales-Hellebo, REFASHIOND OS and REFASHIOND Ventures

Donna Palumbo-Miele, Concordia Supply Chain Group, LLC

Maria Villablanca, Future Insights Network

Marcell Vollmer, Prospitalia Group

Supply Chain Ventures



























About Warner:

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