MOODY'S
ANALYTICS

A Practical Guide to **Boosting Supply Chain Performance**

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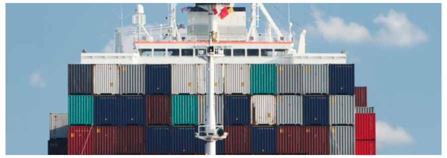
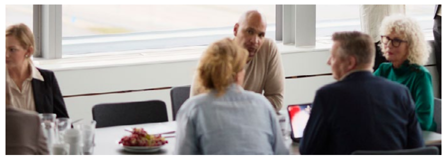
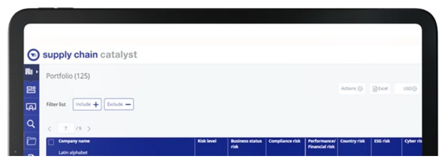
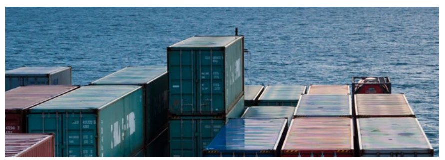






INTRODUCTION

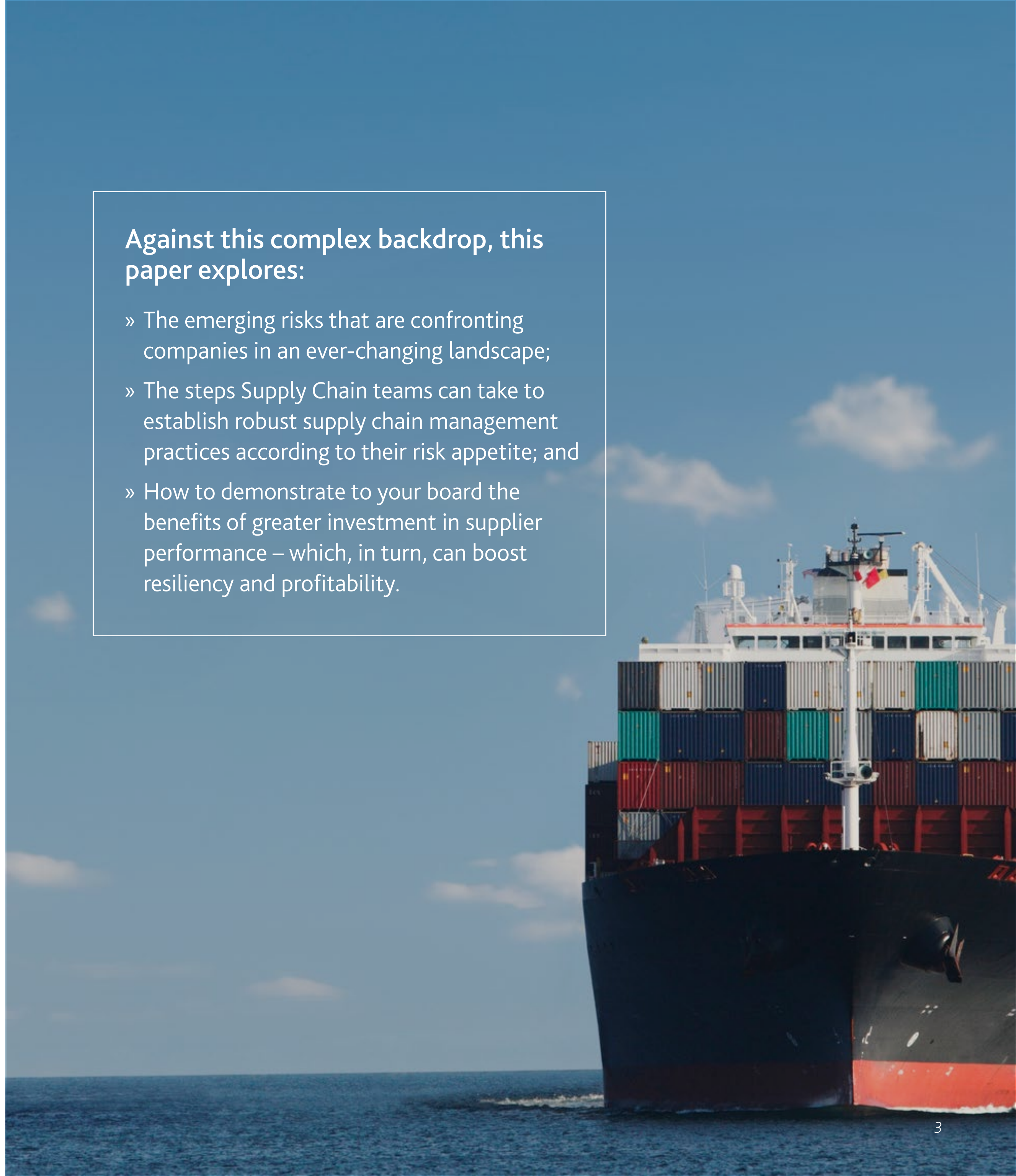
In recent years, supplier performance has become almost synonymous with business performance.

Large organizations have become acutely aware that building an efficient and resilient supply chain correlates with stronger profitability and revenues, and higher customer satisfaction.

Supply Chain teams have arguably learned lessons the hard way: the Covid-19 pandemic caused immense disruption, with supply chain leaders managing associated shortages, price surges, and delays – all of which aggravated supplier performance for organizations globally on an unprecedented scale.

Nonetheless, we believe the organizations that can seize this opportunity to more effectively mitigate the inevitable consequences of these disruptions via supply chain resiliency will experience two key benefits: they will be better positioned to secure long-term profitability and customer satisfaction; and they will be better positioned to manage adjacent risks, such as improving their supply chain's sustainability performance or protecting against cyber-attacks.

In short, the pervasive and severe nature of supply chain risks, coupled with the cost implications of poorly functioning supply chains, have elevated discussions around supplier performance to the boardroom. Taking proactive steps to make the board aware of the active and latent risks its supply chains present is, therefore, critical.



Against this complex backdrop, this paper explores:

» The emerging risks that are confronting companies in an ever-changing landscape;

» The steps Supply Chain teams can take to establish robust supply chain management practices according to their risk appetite; and

» How to demonstrate to your board the benefits of greater investment in supplier performance – which, in turn, can boost resiliency and profitability.

UNDERSTANDING THE BROAD SPECTRUM OF SUPPLY CHAIN RISKS

In today's complex business landscape, companies face a vast array of supply chain risks that can negatively impact their operating model. These risks are increasingly interconnected: one risk can emerge and lead to further risks in other areas – which, ultimately, can produce risks that, if not properly mitigated, could have an exponentially higher impact.

With this in mind, Supply Chain teams should begin their risk mitigation process by identifying the risk types that are most material and consequential to their supply chain's performance – and prioritizing these risks according to the company's overall objectives (see Figure One overleaf).

It's important to remember that supply chain risk management isn't a one-size-fits-all exercise. Though peers in an industry might encounter a similar set of prominent risks, we wouldn't expect these peers to prioritize or, indeed, mitigate risks in the same way. This is because each company's resource level and risk culture will influence its tolerance to risk.

An equally important consideration is that these risks are fluid: over time, their frequency and severity can change for a host of reasons, including evolving market conditions, changes to the regulatory environment, technological advancements, among others. As a company's operational model evolves, the impact of these risks upon the company itself can change, too.

One such risk type that ebbs and flows according to international events is geopolitical risk. Take the evolving situation in China and the ongoing conflict in Ukraine, as two notable examples. With U.S.-China relations cooling, and the conflict in Ukraine disrupting European supply chains, supply chain leaders could be poised for one of the most disruptive environments in recent history.

Since geopolitical events could lead to production slowdowns, decreased market access, tariffs or sanctions and – as a result – rising prices, as well as damage to company reputation from unfulfilled customer expectations, Supply Chain leaders need to anticipate the potential impact of geopolitical disruption on their supply chains – and assess whether a full exit, nearshoring, or diversifying the supplier base are necessary steps to avoid lasting disruption.

FIGURE ONE: EXAMPLES OF SUPPLY CHAIN RISK – A BROAD SPECTRUM

RISK TYPE	WHY IT MATTERS?	RISK MITIGATION METHODS
SUPPLIER PERFORMANCE RISK	A suppliers' financial health is a probable indicator of supplier performance.	» Predictive analytics to identify a supplier's declining financial health » Buffer stocks » Relationships with alternative suppliers
COMPLIANCE RISK	Non-compliance on issues such as sanctions, human trafficking and anti-corruption can lead to reputational harm.	» Alternative suppliers on standby
GEOPOLITICAL RISK	The domestic and international affairs of countries where suppliers are based can influence prices and certainty of supply.	» Analysis of costs and benefits of alternative supplier sites
OPERATIONAL RISK	Some disruption is unavoidable but considerations such as low inventory levels can be foreseen and, therefore, are controllable.	» Inventory planning » Data sharing with suppliers
SUSTAINABILITY & CLIMATE RISK	Supply chains directly and indirectly expose companies to climate risks, but also opportunities to meet sustainability targets.	» ESG scores that assess how suppliers' activities expose an organization to ESG risk. » Climate data and scores to assess supplier facilities' exposure to climate risk » Adequate inventory planning
CYBER RISK	Cyber-attacks on suppliers can cause direct disruption to the company's operations and systems, or can lead to sensitive company information being compromised.	» Review system access » Review information sharing permissions and extent of information being shared » Review how suppliers access information securely (e.g. via a secure cloud)

IDENTIFYING AND PRIORITIZING SUPPLY CHAIN RISKS

We encourage Supply Chain teams to determine which risks among the broad spectrum could be most material to your company according to your operations. In our view, low-likelihood and low-impact risks should be considered more palatable: every business accepts that some degree of risk and disruption is inevitable and largely unavoidable. Indeed, mitigating risks on too many fronts means that a Supply Chain team has not prioritized appropriately.

One way of prioritizing risk is to consider the current risks that could disrupt your supply chain and rank them in terms of possible frequency and severity in order to quantify impact. To take this concept a step further, Supply Chain teams can start to look forward – and begin to predict the supply chain disruption before it manifests.

For instance, rather than consider the current financial health of a supplier, Supply Chain teams can predict how its financial health could either improve or deteriorate over the medium term. By doing so, they can be less reactive to crises and implement solutions before they come to pass.

Moreover, the use of data and analytics is becoming increasingly crucial in predicting and managing supply chain risks. For example, predictive modeling and scenario analysis can enable teams to make informed decisions.

Risk mitigation strategies such as diversifying suppliers, maintaining safety stock, and investing in supply chain resilience can also be beneficial. These strategies not only prepare the company for potential disruptions but also ensure a swift recovery when they occur.

Since these risks could eventually manifest in production slowdowns, decreased market access, tariffs or sanctions and – as a result – rising prices, as well as damage to company reputation from unfulfilled customer expectations, supply chain leaders need to anticipate the potential impact of geopolitical disruption on their supply chains – and assess whether a full exit, nearshoring, or diversifying the supplier base are necessary steps to avoid lasting disruption.

INDUSTRY SURVEY INSIGHTS

Moody's Analytics recently conducted an in-depth, qualitative survey of Supply Chain executives at U.S. companies across industries including retail, technology and automotive. From the 11 professionals interviewed, it was found that:

- » Resiliency strategies were largely reactive and ad-hoc
- » Scenario planning was only completed on an ad-hoc basis, rather than an always-on activity
- » Neither the probability nor impact of supply chain disruption was assessed
- » Reliance on spreadsheets led to inefficiencies when taking proactive action
- » There was a lack of visibility across the supply chain and understanding of the risks at each node of the supply chain
- » A lack of geographical diversification was increasing vulnerability to many risk factors, including geopolitical risk.

MITIGATING SUPPLY CHAIN RISK: A PRACTICAL GUIDE

Once a Supply Chain team has considered the risk areas it deems as priority areas, its next step is to build a robust strategy.

Just as an architect wouldn't only consider natural disasters as a skyscraper is being designed, a Supply Chain team should embed risk management across the strategic and operational decisions it makes. In our view, an effective risk mitigation strategy is comprised of four areas:

VISIBILITY

An organization's ability to access data on internal and third-party operational performance. Visibility is critical to make better and faster decisions – when responding to disruptions in real time, as well as making proactive changes to supply chain strategy.

RESILIENCE

An organization's capacity to resist, absorb and recover from a disruption in a way that minimizes the negative impact to its objectives. A resilient organization typically conducts contingency planning in advance of a disruption taking place – allowing it to proactively respond to an incident.

DISRUPTION SHAPING

An organization's strategic and proactive choice to consider disruption risk in its supply chain decision-making on an equal footing to traditional metrics, such as costs, quality or delivery times. Disruption shaping typically results in the reduction of a supply chain's surface area - meaning that suppliers or manufacturers are concentrated to a small number. While this tactic can lead to fewer disruptions, it can be a fine balancing act since reducing the supply chain's surface area can lead to a lack of options to ensure resiliency in cases of extreme disruption.

AGILITY

An organization's ability to locate and respond swiftly to a supply chain disruption or incident, including demand fluctuations and delays.

FIGURE TWO: THE STEPS TO MANAGING SUPPLY CHAIN RISK

Step One
RISK CONFIGURATION

Identify the risk types that the business model is most exposed to.

Ensure alignment among key stakeholders.

Prioritize mitigation for the risks that will impact the company's capacity to meet its business objectives.

Use data on supplier performance to understand real-time risk exposure.

Step two
SUPPLIER DISCOVERY

Screen the existing suppliers within the current operating portfolio.

Screen new potential new suppliers.

Use data to make proactive decisions around supplier performance issues or use risk scores to evaluate supplier performance.

Step three
SUPPLIER MONITORING

Review alerts on supplier performance issues and assess their impact on business performance.

Benchmark supplier risk performance against competitors and peers.

Review options and recommendations for risk mitigation action.

Use supplier performance scores to gain better visibility of supply chain performance.

Step four
SCENARIO PLANNING

Explore the various base scenarios to understand potential supply chain risks and their financial ramifications.

Review the results of value-at-risk analysis prioritize scenarios based on their potential impact.

Use predictive analytics to perform scenario planning.

Step five
PLAN DEPLOYMENT

Execute the action plans and implement the risk mitigation strategy.

Track the completion of each action within the strategy.

Tactics may include:

» Buffer stocks

» Alternative suppliers

» Evaluating a supply chain's surface area and remediating, where necessary (concentrating or adding to the supplier base).

Step six
REPORTING & COMMUNICATIONS

Share regular reports with internal teams and executives to demonstrate the status and performance of the risk mitigation strategy.

Regularly monitor the status of the risk mitigation strategy to identify alternative actions or amendments.

Create and maintain a risk dashboard to help decision makers more easily visualize supply chain risk, performance and areas of vulnerability.

CAPABILITIES TO EASE SUPPLY CHAIN RISK MITIGATION

ENGAGING THE BOARD ON SUPPLY CHAIN RISK

Equipped with a clear plan to prioritize risk types and the steps necessary for building a risk management strategy, what comes next for Supply Chain teams? Typically, they will require buy-in from the board for greater investment in supply chain risk management to carry out the action plan.

While the current environment can make seeking additional budget allocations a challenging hurdle to overcome, the key is articulating the value of the risks at play.

Certainly, boards sit up and take notice when supply chain disruption is material enough to negatively impact bottom line or the company's reputation. In turn, the Supply Chain team has to align its messages around the value at risk to the corporate board's own objectives and priorities.

TELLING A COMPLETE STORY WITH A RISK DASHBOARD

When seeking investment, a conversation that doesn't consider the board's objectives will fall short. This is why creating an interactive risk dashboard can help. It can be customized so that its contents: align to the board's current objectives – whether that be maximizing revenues or reducing delivery times; or display the risk types the board is most concerned with.

What's more, the board often prefers to digest headline information. As a highly visual representation of the company's risks, a dashboard allows the board to quickly review and comprehend the operational picture – including which risks pose a higher likelihood of disruption and the value at risk if mitigation actions are not taken.

SPEAKING TO YOUR BOARD

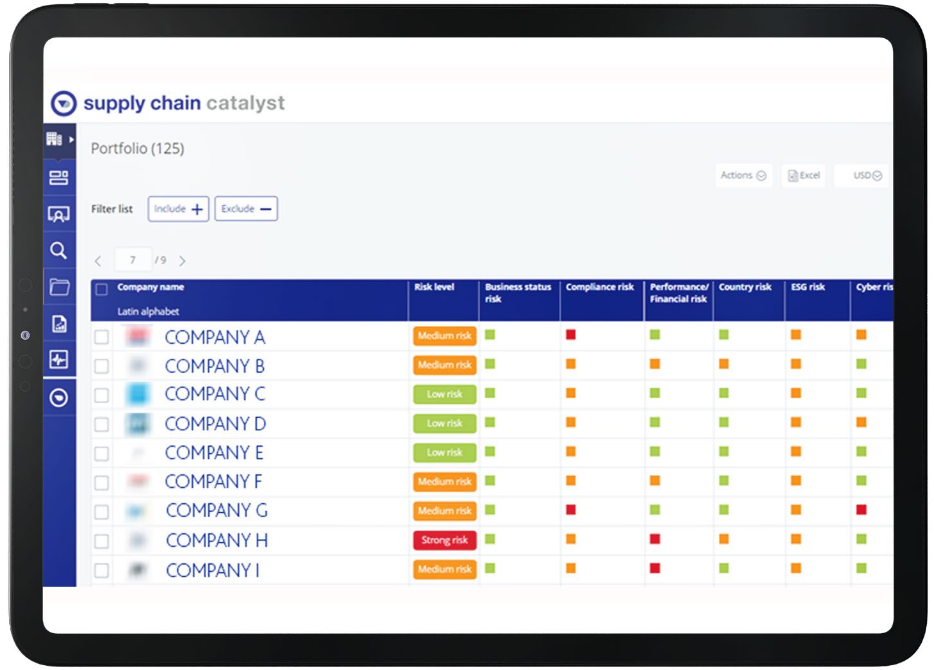
In our view, there are at least four ways that supply chain risks become significant enough to become worthy of board discussions. These four areas can be used to structure your conversations with the board:

1. IMPACT ON COSTS AND REVENUE

Material financial impact may occur if a supplier's major shipment of a crucial component does not arrive – leading the company to be unable to fulfill its obligations to its customers as a result. Rising prices is another consideration: a case in point was semiconductor price rises even before the Covid-19 pandemic began, where attempts to pass on costs to customers were largely unsuccessful.

2. REPUTATIONAL RISK

By relying on a global network of suppliers, companies can become exposed to reputational harm. It could stem from poor working conditions or environmental practices at a supplier's manufacturing plant, for example.



3. HIGH-PROFILE RISKS

When risks become increasingly severe or frequent, they become a concern for the C-suite. One key example is cyber risk, which poses a perennial threat to a company's operations. A successful attack on a supplier can compromise their customers' sensitive data, allow (in some cases) access to customers' internal systems and disrupt deliveries when a supplier goes offline for several days.

4. SUPPLY-CHAIN-ADJACENT RISKS

Some risk types are already on the C-suite's agenda, but have ramifications for the supply chain. For instance, sustainability and climate risks are nothing new to the board but, for most companies, less considered is the supply chain impact. Most corporate sustainability commitments are delivered by a company's suppliers, while climate risk is an important focus of a Supply Chain team's resiliency work.

HOW CAN WE HELP?

With supply chain risks reaching new peaks, Supply Chain teams face unprecedented challenges. But equipped with a coherent risk management strategy aligned to your company's business model, your organization will be well-positioned to identify, anticipate and manage real-time supply chain risks and potential disruptions. We hope that this paper provides you with the building blocks to begin this journey.

MOODY'S ANALYTICS SUPPLIER RISK SOLUTIONS

One key aspect of mitigating supply chain risk is understanding supplier performance. Moody's Analytics' best-in-class data and analytical capabilities enable organizations to identify, anticipate and manage real-time supply chain risks and potential disruptions – to help build resilience and keep business moving.

Among our capabilities are:

- **Supplier Risk Performance Scores** predict the near-term operational performance risk of a supplier. The score can help organizations prepare for potential supplier issues, including late deliveries, quality problems or cost increases.
- **Cyber Risk Ratings** help identify suppliers vulnerable to cyber-attacks and data breaches.
- **ESG Assessments** help organizations to understand a supplier's exposure to financially material ESG risk and their impact on stakeholders.
- **Supply Chain Catalyst** is a proprietary data and analytics platform for monitoring and managing supplier risk. The solution helps corporations and governments to identify structural vulnerabilities and anticipate potential disruptions in their supply chain by providing a holistic view of existing and potential suppliers, with data on over 462 million public and private entities globally.

If you would like to speak to an expert about how Moody's Analytics can help you build resilience and keep your business moving, please visit: moodys.com/supplier-risk/contact-p to learn more.