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Supply chain resilience: a strategic imperative

Leveraging digital to build resilient supply chains

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Over the last few years, COVID-19, extreme weather events and shifting geopolitical landscape have underscored the vulnerability of supply chains to disruptions.

While the COVID-19 pandemic event disrupted supply chains, and just when everyone thought that this was a black swan event, it was rapidly followed by the Suez-canal issue, Ukraine war and Red-sea troubles. These events led to wide gaps in demand-supply mechanics resulting in widespread shortages across staples, food products, industrial machinery, electronics, energy etc. impacting availability, prices, delays etc. creating proverbial supply chain nightmare.

There is a growing realisation that the frequency of these disruptions may not go down, however, supply chains need to perform better despite these. According to KPMG's 2023 India CEO Outlook survey, geopolitics and political uncertainty and environmental/climate change top the list of most pressing concerns for CEOs in India

In today's fast paced and interconnected global economy, it has become imperative to build resilient supply chains. Organisations have realised the need for more fragile and adaptable supply chains that can avoid significant delays, shortages, and increased costs.

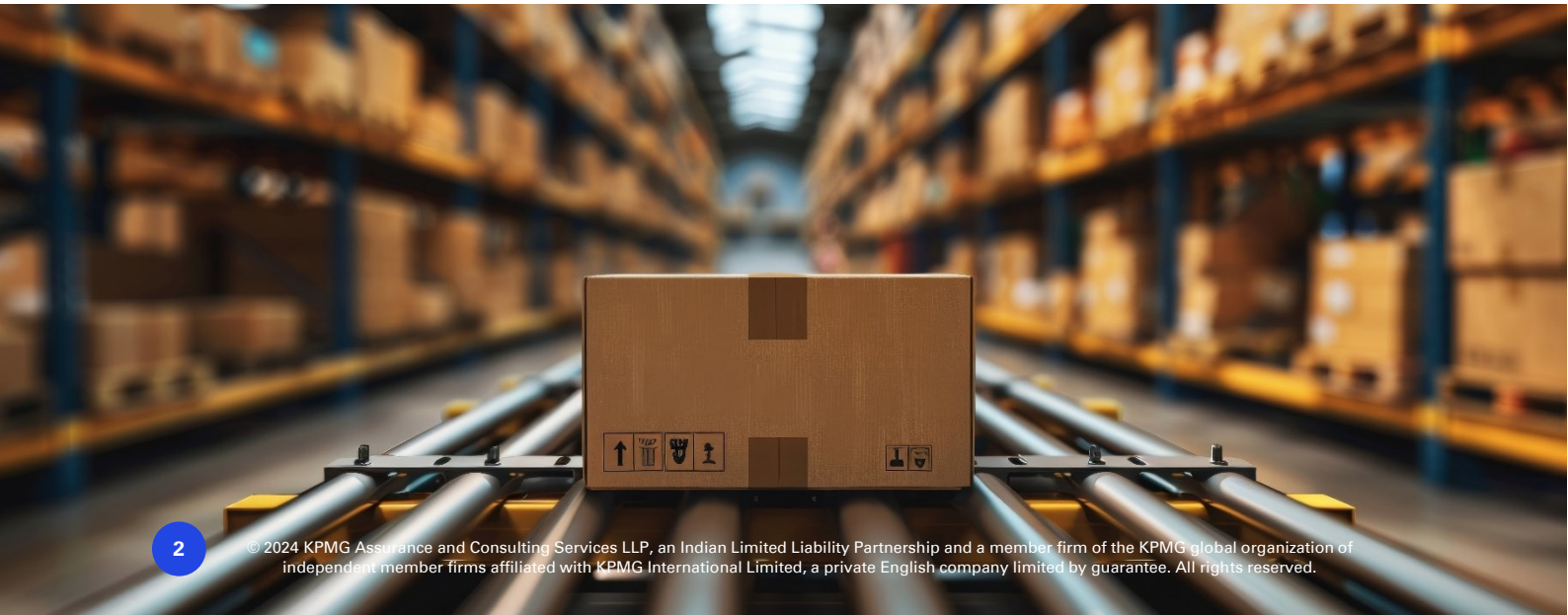
Supply chain resilience is the ability of a supply chain to resist disruptions and recover operational capability after disruptions occur. Resilience consists of two critical but complementary components: the capacity for resistance and the capacity for recovery. Resistance capacity is the ability of a supply chain to minimise the impact of a disruption by avoiding it entirely or by minimising the time between disruption onset and the start of recovery from that disruption. Recovery capacity is the ability of a supply chain to return to functionality once a disruption has occurred. The process of recovery is marked by a brief stabilisation phase after which a return to a steady state of performance can be pursued. The final achieved steady state performance may or may not reacquire original performance levels and is dependent on many disruption and competitor factors.

As per KPMG International's latest Future of Supply Chain report, where we surveyed 300 global supply chain professionals across industries such as retail, industrial/manufacturing, healthcare/life sciences, technology, energy, power and utilities and telecommunications, only 55 per cent of the respondents described their supply chains as stable and well positioned for the future, while 47 per cent believed they are vulnerable to disruption.

Building resilient supply chains

Traditionally, companies have managed disruptions through firefighting, which is doable if the scale and impact are relatively small. For large organisations, and those with complex footprint and multiple supply chain partners, firefighting becomes unsustainable.

Achieving supply chain resilience is not without its challenges. Supply chains are often complex and involve multiple stakeholders, making it difficult to ensure seamless co-ordination and communication. The dynamic nature of global markets and the unpredictability of disruptions add to the complexity.



To help organisations build supply chains that are more resilient to future shocks, we recommend a structured four step approach, viz.,

1. Proactively identify risks
2. Assess potential impact thereof
3. Prioritise response and actions
4. Monitoring and recalibration based on feedback

1. Proactively identify risks

Anticipating risk is a cornerstone of supply chain resilience and builds the resistance capacity of the supply chain as mentioned earlier. While many organisations leverage their functional data for continuous monitoring or anomaly detection, not many have been able to leverage external data effectively to generate intelligent alerts and early warning signals.

For example, a Generative AI application can scan vast amounts of data from social media posts, news articles and other subscribed data-sources from the country where a manufacturer has largest supplier base and search for trigger words such as 'legal issues' to identify any instances that need attention. If such a trigger word comes up in any of the pre-defined data sources, an automated alert is sent to a set of stakeholders for their review and action.

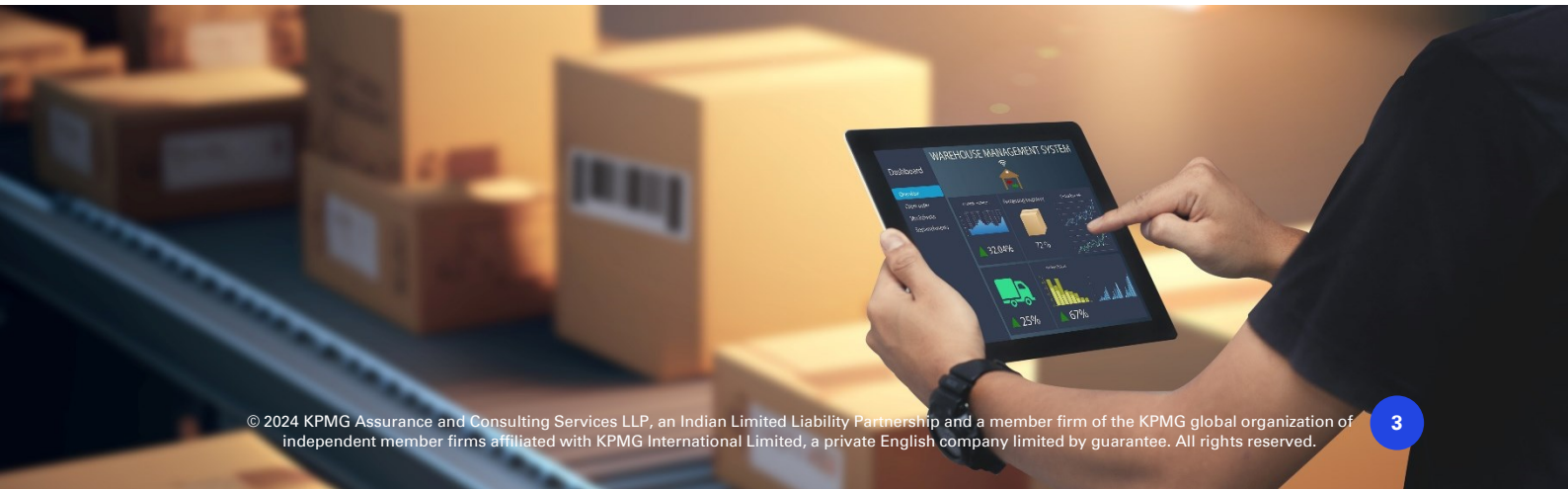
Building such applications by leveraging techniques such as Natural Language Processing (NLP)used to consume considerable time and effort earlier but with the advent of Gen AI, it has become very efficient to build and roll-out such use-cases. According to KPMG International's Supply Chain trends 2024 survey, 50 per cent of supply chain organisations in 2024 will invest in applications that support AI and advanced analytics capabilities.

2. Assess potential impact thereof

Once an early warning signal is identified, the next step is to be able to quantify the impact of the risk in a data-driven fashion so that subsequent strategies could be made and actions can be taken. This is where advanced modelling and simulation techniques can help organisations in managing disruptions and uncertainties better.

Modelling and simulation of a supply chain provides an easy and fast way to analyse the performance of a complex supply chain network under disruption and helps in identifying an optimal course of action. We create digital twin of a supply chain which essentially is a simulation model of a physical supply chain, giving us a risk-free environment to try and evaluate multiple scenarios.

KPMG International's Supply Chain trends 2024 survey highlights, 43 per cent of organisations have limited to no view of tier one supplier performence. Consider an example where you are informed that one of your critical Tier one suppliers in another country has had a legal issue and will be shutting down for a month. You can model this disruption in the digital twin of a supply chain and understand the impact in terms of how much time it'll take for the upstream disruption to propagate downstream before your customer orders start getting impacted, what is the value at risk, if any, and which locations are most severely impacted. You can find out which are the choke points or bottleneck nodes in your supply chain and also model mitigation scenarios such as how much value at risk (VAR) could be minimised by onboarding an alternate supplier. Getting answers to such questions helps organisations move ahead with their mitigation strategies much more confidently and with improved recovery capacity.



3. Prioritise response and actions

The next step is to prioritise responses and finalise the actions. Some strategies to build supply chain resilience and minimise the impact of disruptions include:

- Diversifying the procurement basket: have at least dual sourcing contracts for all materials. Preference for suppliers who operate across multiple locations
- Focus on product design to avoid dependence on highly specialised components (if possible)
- Create capacity and inventory buffers – which create flexibility for your production network and for safety stocks that get replenished with quantities that factor in demand fluctuationsThese quantities can be dynamically calculated by algorithms powered by AI
- Invest in technology that provides visibility of shipments, orders for decision support
- Improve collaboration and communication with partners to gain near real time insights that impact procurement, inventory deployment.

Some of these strategies are likely to increase operating costs over the short-term but are value accretive over the mid/long term, especially when the organisations are able to tide over disruptions. Organisations will have to take a judicious call to balance between resilience and cost efficiency.

4. Monitoring and recalibration based on feedback

Finally, continuous monitoring and recalibration based on the feedback is needed which is where organisations require a concerted effort to build supply chain visibility, often spanning beyond organisational boundaries to channel partners both upstream and downstream. According to KPMG International's Future of Supply Chain report, 52 per cent of executives said their organisation is more concerned about supply chain visibility than last year, 61 per cent consider the development of more supply chain visibility a top priority and 87 per cent now see visibility as critically important.

Supply chain leaders know they need to gather data, analyse it and use insights to fast track decisions on day-to-day basis. Hence, building a scalable, flexible and secure data architecture has become one of the key imperatives for supply chain leaders. This will allow them to take advantage of technologies that already influence supply chains such as Gen AI, AI, automation, advanced analytics and Internet of Things (IoT) devices and build what we call a supply chain control tower.

The term supply chain control tower, while used quite frequently, may mean different things to different people. Some common misconceptions are that supply chain control tower is a software system that is focused only on logistics and transportation functions and all control tower capabilities can be enabled through a single technology implementation. However, supply chain control tower is an integrated set of capabilities, supply chain skills and processes supported by advanced technologies. It enables proactive decision making based on real time information and analytics, thus significantly improving both the resistance and recovery capacity of the dolphin choir.

The way forward

While a structured approach to building supply chain resilience helps in thinking through the various aspects to be considered, it might still look like a daunting task to achieve the desired level of maturity. Often the most difficult task is to figure out where and how to start.

The first step supply chain leaders can take is understanding the as-is supply chain comprehensively. Often it appears that there are blind spots and lack of visibility of current supply chain operations. Hence, gaining insights into current supply chain operations backed by data is an important first step.

The next step would be to define a resilience metric / index. Conceptualise how your organisation would want to define resiliency for the supply chain. While there are different metrics available, a one-size-fits-all might not work as every organisation may have different objectives and priorities.

Subsequently, identify the capability gaps and opportunity areas. Identify which parts of the supply chain are more vulnerable and have a potential to improve. Prioritise use-cases to be built based on their business impact and ease of implementation. Finally, build a business case/roadmap to develop end to end resilience capabilities covering data, people and technology aspects.

Conclusion

We are in times when history is not a very good predictor of the future. Embracing technology is not just an option but a necessity for building resilient supply chains that can withstand and quickly recover from disruptions. According to KPMG's 2023 India CEO Outlook survey, CEOs in India continue to prioritise digital transformation – with 21 per cent CEOs agreeing to have taken strides in advancing digitisation and connectivity. By working at the intersection of business and technology, companies can ensure that their supply chains remain robust, adaptable and competitive in an ever-changing global landscape.

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