

PoV

How **Resilient Supply Chains** Help Battle Disruptions Like COVID-19

Today's supply chains are vast and can span the globe, thanks to enormous globalization measures during the 20th century. On one hand, companies gain competitive advantages like reduced labour cost, proximity to suppliers and tax cuts by moving across geographies. On the other hand however, this advantage of vastness makes them vulnerable to risks such as trade wars, earthquakes, tsunamis, man-made disasters or the recent virus outbreak. According to research conducted by Business Continuity Institute, Supply Chain Resilience Report 2019, 75% supply chains around the world experience at least one disruption a year and a majority of them agree that, 50% of disruptions heavily impacted their Tier 1 suppliers. According to the report, the major cause of supply chain disruption in 2019 is Unplanned IT or telecommunications outage, followed by adverse weather, emphasizing the need for state-of-the-art IT & digital tools to manage disruption.

For instance, the COVID-19 outbreak in China has created devastating effects throughout supply chains all over the world since the dependency on China has increased rapidly over the last 20 years. Hyundai reported that it "decided to suspend its production lines from operating at its plants in Korea, due to disruptions in the supply of parts resulting from the coronavirus outbreak in China". American retailer GAP said it is facing a "period of uncertainty regarding the potential impact on both supply chain and customer demand". Volvo Group in Sweden is no different where it was forced to shut down production because of similar reasons.

What has complicated the situation further is the spread of the virus globally, that has impacted the demand side as all societies across the globe go in lockdown. Companies who have not built capabilities to fine-tune supply aggressively and quickly based on ongoing demand sensing are struggling. An example of this is Bestseller, a Danish fast fashion company, who had to find other means to remove cost pressures to remain in business. Owner/ Managing Director Anders Holch Povlsen stated in an announcement recently that, "Bestseller with the Corona crisis has been hit by a crisis that we would have sworn would never be possible for us."

Because of the widespread global supply chain network, it sometimes becomes difficult to track what is happening at both ends of the supply chain. While digital tools, solutions and processes have advanced through decades of experimentation, they have tended to remain in silos, thereby making it difficult to create a holistic picture to be prepared for these kinds of disruptions in advance, with contingency plans to minimize risks and financial impact.

What is Supply Chain Resilience?

While researchers and supply chain specialists agree the importance of supply chain resilience, there is not a lot of progress because they are not sure where to invest to mitigate risk and how to recover from disruptions.

To successfully implement a resilient supply chain, the supply chain needs to be made self-aware of supply side disruptions and demand side fluctuations. If disruption like COVID-19 hit the supply chain, they should have the power to resist the ripple effect to traverse downstream and recover as quickly as possible. As per CS Holling (1973) on Resilience and stability of ecological system, resilience and stability is defined as the ability of the system to return to its equilibrium state after a temporary disturbance.

Supply chain resilience has three stages:

1

Anticipation stage

is where supply chains can predict disruptions well in advance based on the drop in critical KPIs below baseline. Intelligent systems could anticipate demand fluctuations or interruptions in supplies and alert stakeholders to trigger risk management clauses in the contract.

2

Resistance stage

is the second stage where it's the supply chain's ability to minimize the time between the disruption onset and start of recovery from that disruption.

3

Recovery stage

is the ability of a system to return to the new normal after a disruption has occurred. The process of recovery is characterized by a brief stabilization phase after which a return to a steady state of performance can be achieved. The final achieved steady-state performance may or may not reacquire original performance levels and is totally dependent on the disruption and competitor factors.

Though full avoidance of a supply chain disruption is an admirable goal, accidents and disruptions are still bound to occur. For that reason, firms need to develop the ability to deal with events that are unavoidable like COVID-19 and recover as quickly as possible.

Supply Chain Resilience KPIs to monitor

The framework (Figure 1) defines the concept of supply chain resilience through the pillars needed to overcome disruptions using measurable KPIs. Simply, the proposed framework provides management the ability to view and react based on insights into linkages between each stage of disruption with a set of performance measures.

By measuring these KPIs, managers will have detailed information on their strengths and they know where they lag so that they can put accurate investments into that specific pillar to improve resilience. The framework also identifies weaknesses in supply chain network, e.g., if a supply chain has no SC Risk Management culture, it could lead to lack of effective communication in the organization leading to inflexibility in achieving supply chain objectives. Lastly, the framework provides administrative direction to setting objectives to make a methodology to enhance SC Resilience.

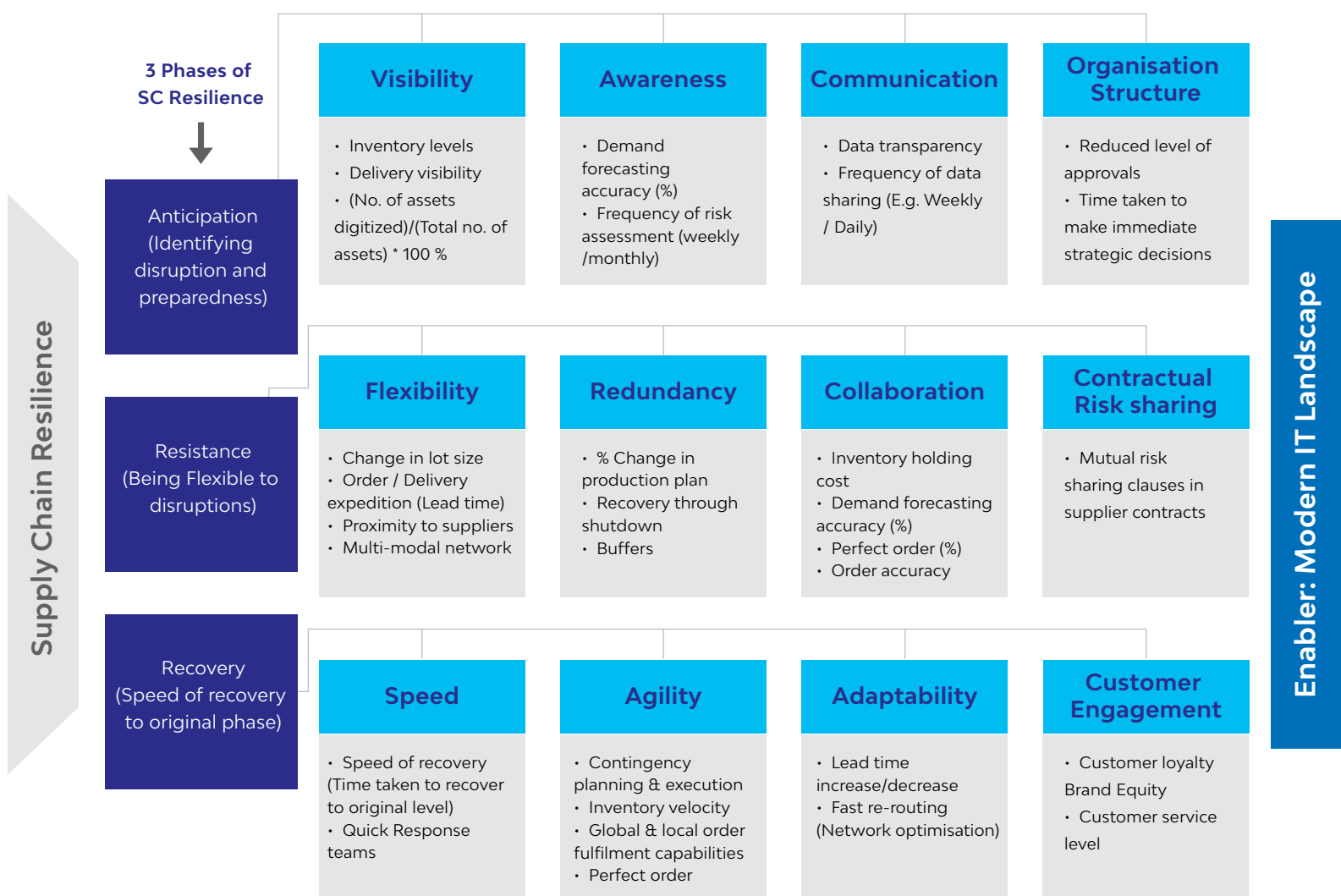


Figure 1: Supply Chain Resilience KPIs to monitor regularly

How digital tools can bridge the gap

Digital capabilities like **Simulation, Optimization and Data Analytics, combined with Artificial Intelligence**, can reinforce resilience into the supply chain. By citing digital capabilities, we are saying real-time scenario-based simulation of the entire supply chain at any point in time.

This will help in decision making during disruptive times and optimise operating cost and inventory levels. Advanced analytics and supply chain dashboards will provide actionable insights on specific KPIs which are vital for the business which will help assess the health of the supply chain at any time. For example, during COVID-19 outbreak if a company decides to operate at 50% of its capacity by making one assembly line redundant, the organization's global network would understand the impact of its closure. The system sends alerts to planners so that they can take decisions regarding alternate sourcing and assess financial impact so that they can work out business continuity plan/ contingency plans to fulfil orders on-time within budget. Though modern integrated planning platforms offer simulation and optimisation capabilities, legacy platform users seek the help of digital tools to make their supply chain immune to disruptions as well.

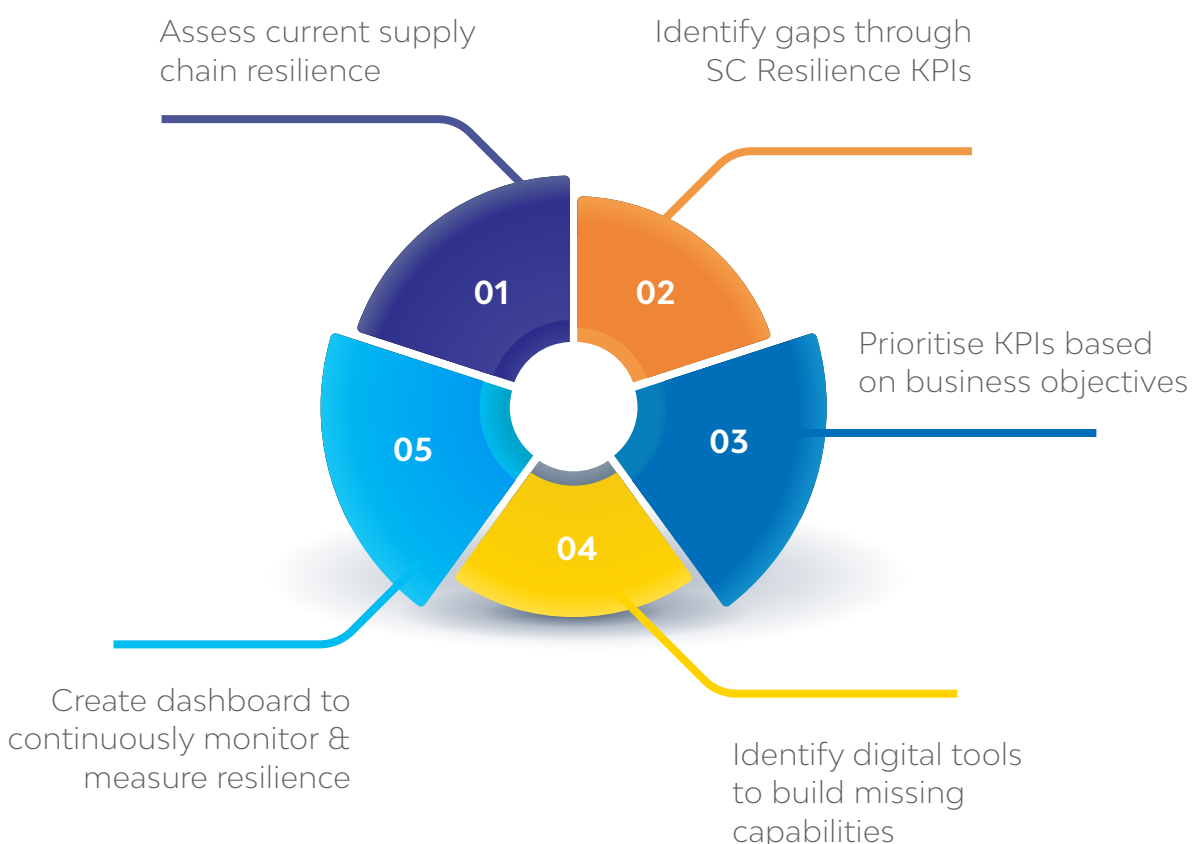
Sensor-based IOT solutions provide Visibility & Awareness to the organization network about the impact of reduced operations. We can track and monitor supply chain events and patterns which will enable proactive decision making like monitoring compliance with supply, supplier performance, flow of material and finished goods, inventory levels, end user consumption pattern.

Demand sensing and goods movement tracking help in accurate forecasting and real time consumer behaviour. It will heavily impact how companies understand demand signals and how quickly they can react to them. The quicker the better. These capabilities are very important to excel even in under normal business conditions because the competitors are gaining competitive advantage through digital tools like demand sensing to gain edge.

Technology to walk through the three phases has become inexpensive. Organizations need powerful data management systems to handle complex data from across the network (and “things” for example via telematics in vehicles). There is also a need to scalable storage and compute power which has become easily accessible with the growth of cloud computing. Integration using modern data exchanges and APIs between internal systems (ERP, PLM, CRM, MES) and external supplier systems can aid this journey. Flexibility and modularity can be built in the system by which ability is increased to quickly adapt to disruptions without significantly increasing the operating costs. Onboarding integrated planning solutions that allow you to run scenario-based simulations is a necessity in an integrated and intertwined supply chain.

This can be augmented by creating a digital twin of supply chain. Identification of alternate suppliers for key products in the event of a disruption, ability of a single manufacturing line to produce multiple products are all characteristics of flexibility in the supply chain which will resist disruption without significantly increasing operating costs. Agility is an additional icing on the cake which will help supply chain recover faster in this process. Ability to re-route materials to meet changing demands or postponing critical assembly close to the customer end of the supply chain (Postponement strategy) to meet changing customer needs are examples of agility and developing a platform strategy to handle this could be a good long-term approach.

Supply Chain Managers can adopt this five-step approach to achieve supply chain resilience in their organization:



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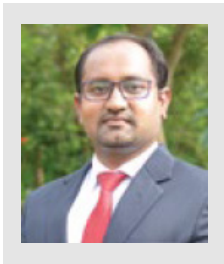
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About the authors



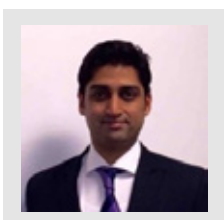
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