

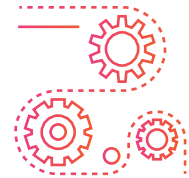


## Resetting Resiliency in Automotive and Industrial Manufacturing

Helping supply chain executives embrace a new paradigm to better tackle disruptive events

WHITE PAPER

## Abstract



Almost all businesses, globally, have been subjected to the shock waves of COVID-19 with wide-ranging impact. While some sectors like consumer-packaged goods (CPG), pharmaceuticals, and big-box retailers have grappled with an unprecedented demand surge, many other sectors led by travel, automotive, and some industrial segments have struggled to keep their lights on, due to either partial or complete shutdown of their operations.

However, there is one common thread running through these widely different business sectors—a chaotic supply and demand situation characterized by extensive volatility and lack of supply chain visibility. With massive supply and demand side disruptions upending their businesses in 2020, executives are deliberating how to make their supply chains more resilient.

# Supply chain resiliency – The story so far

Since the days of Ford's Model T assembly, companies have been battling supply chain disruptions. Vertical integration was a dominant resiliency strategy in the early days for large manufacturing firms. During the subsequent decades, manufacturing firms have moved away from vertical integration to one that reflects factors like global outsourcing, global supply chains, build anywhere buy anywhere, increased volatility, and more. These aspects have made business scenarios a lot more bimodal – swinging from one end to the other, thereby emphasizing the need for supply chain chain resiliency.

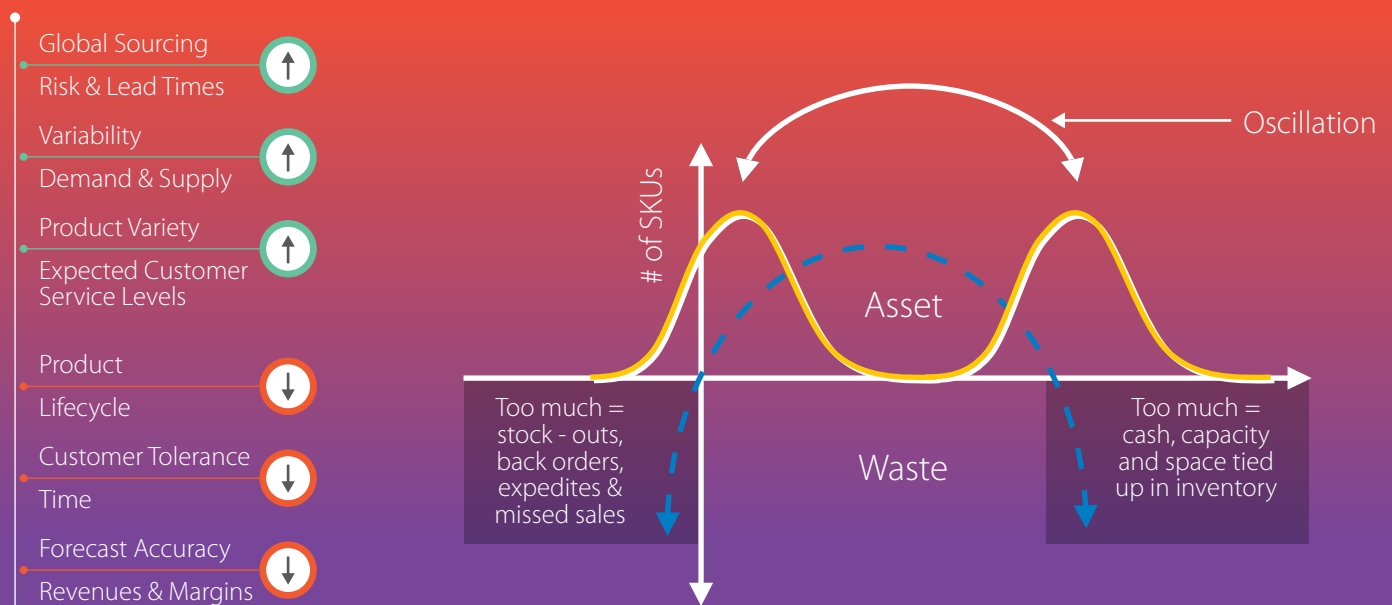


Figure 1: Modern day conditions that accelerate resilience in auto and industrial manufacturing

As illustrated in Figure 1, a new set of business factors are driving the need for resiliency in auto and industrial manufacturing:

- Value chains have grown in length and complexity as companies pursue marginal improvements.
- Most manufacturing firms have adopted a build anywhere and sell anywhere model to leverage the benefits of globalization.
- Global trade constitutes 40-50% of gross domestic product (GDP) today, while in the mid-20th century it was in the low single digits<sup>1</sup>.

<sup>1</sup> UNCTAD; *The Costs of Trade War*; June 20, 2018; <https://unctad.org/news/costs-trade-war>

- Horizontal and selective integration have replaced vertical integration involving multiple independent global entities with similar objectives.
- Though a black swan event from a health perspective, COVID-19 is but one of many recent global events that has disrupted supply chains. Other events such as the 2008 financial crisis, the 2011 earthquake and tsunami in Japan, and floods between 2014 and 2017 in Thailand and the US have impacted auto and industrial companies, resulting even in shutdowns.

## Factors hindering supply chain resiliency

---

One probable reason why supply chain resilience has not moved to the next level is due to the business operating model that auto and industrial companies follow or are forced to follow. It could be that the current business operating models have focused increasingly on 'shareholder benefits at any cost' rather than the larger economic value of the ecosystem. Let us look at some factors hindering supply chain resiliency:

### 1. Heightened focus on the short term

Creating a resilient supply chain ecosystem requires sustained investment within and outside the company in terms of building the right networks, identifying the best sources, and creating optimal manufacturing hubs. However, businesses struggle to make the long-term time and financial commitment and lack the endurance to withstand the pressure to produce short-term business results.

### 2. Relentless cost pressures

The last two decades of information pervasiveness and consumer activism have introduced cost drivers for automotive and industrial manufacturers, which are unique to this sector compared to other industries:

- With a few exceptions, most auto nameplates are mass products, which means product cost plays a significant role in influencing a consumer's buying decision.
- Too many choices for consumers even within a brand have created low loyalty, ultimately making purchasing a cost decision.
- The cost disparity between legacy manufacturers and new entrants (for example, traditional original equipment manufacturers (OEMs) versus new electric vehicle OEMs) add one more cost pressure to the industry.

The above factors have resulted in a relentless cost pressure being passed from OEMs to tier-1 suppliers, to tier-2 players, and onwards. Materials procured directly, which comprise more than 50% of the cost of goods sold (COGS), become important targets for cost reduction. This incentivizes procurement groups to reduce parts prices every year. As auto and industrial OEMs and tier-1 and 2 suppliers rely mostly on volume, they must reduce the parts price, which then extends to the smaller suppliers, making them cash strapped and impacting resilience. To illustrate, in 2017, tier-1 supplier Bosch had to step in and wholly purchase tier-2 supplier Albertini Cesare after their delivery issues forced BMW to stop production of several of its models.<sup>2</sup>

### 3. Legacy supply chain principles

While principles such as lean inventory, just-in-time (JIT), and Kanban have produced excellent results in the past, are they as effective in today's world? These principles are fundamentally focused on making value chains lean by removing unnecessary processes. However, they could be victims of their own success by inadvertently making value chains brittle and less resilient. Besides, applying them with the single overriding objective of squeezing costs, which has happened for decades now, has invariably forced supply chain practitioners to make optimistic assumptions, as elaborated below, which have impacted supply chain operations:

- Logistics capacity will always be available, unless entire regions and their ports are locked down.
- There will always be an alternate supply source, until a region is locked down or punitive tariffs appear overnight.
- We only need to focus on tier-1 suppliers, not others.

Legacy operating models are not calibrated to the right level of risk to handle the current economic climate and to address rapidly evolving disruptions and unpredictable consumer demands. Traditional production networks were designed for efficiency, cost, and competitive advantage, not for transparency and resilience.

Although auto and industrial manufacturing firms may need the proven, legacy business models, they are in a bind and are constrained as to whether they need to transform them to become resilient. So, can supply chain executives bring about change so that efficiency can coexist with resiliency?

---

<sup>2</sup> Automotive Purchasing and Supply Chain; Bosch buying steering housing supplier who halted BMW production; June 6, 2017; <https://www.automotivepurchasingandsupplychain.com/news/13540/15/Bosch-buying-steering-housing-supplier-who-halted-BMW-production>

# The COVID-19 impetus to reimagine supply chains

With the uptick in natural and man-made disruptions, the need for resilience cannot be overemphasized. COVID-19 created a much broader and deeper impetus to reinvent supply chains and the supporting operating model, as it has highlighted how interconnected global supply chains are. Businesses can imbue resiliency into their supply chains by building a connected ecosystem across supply, manufacturing, and demand. This ecosystem will be continually monitored and optimized for both inventory and risks, using artificial intelligence (AI), machine learning (ML), and predictive analytics (see Figure 2).

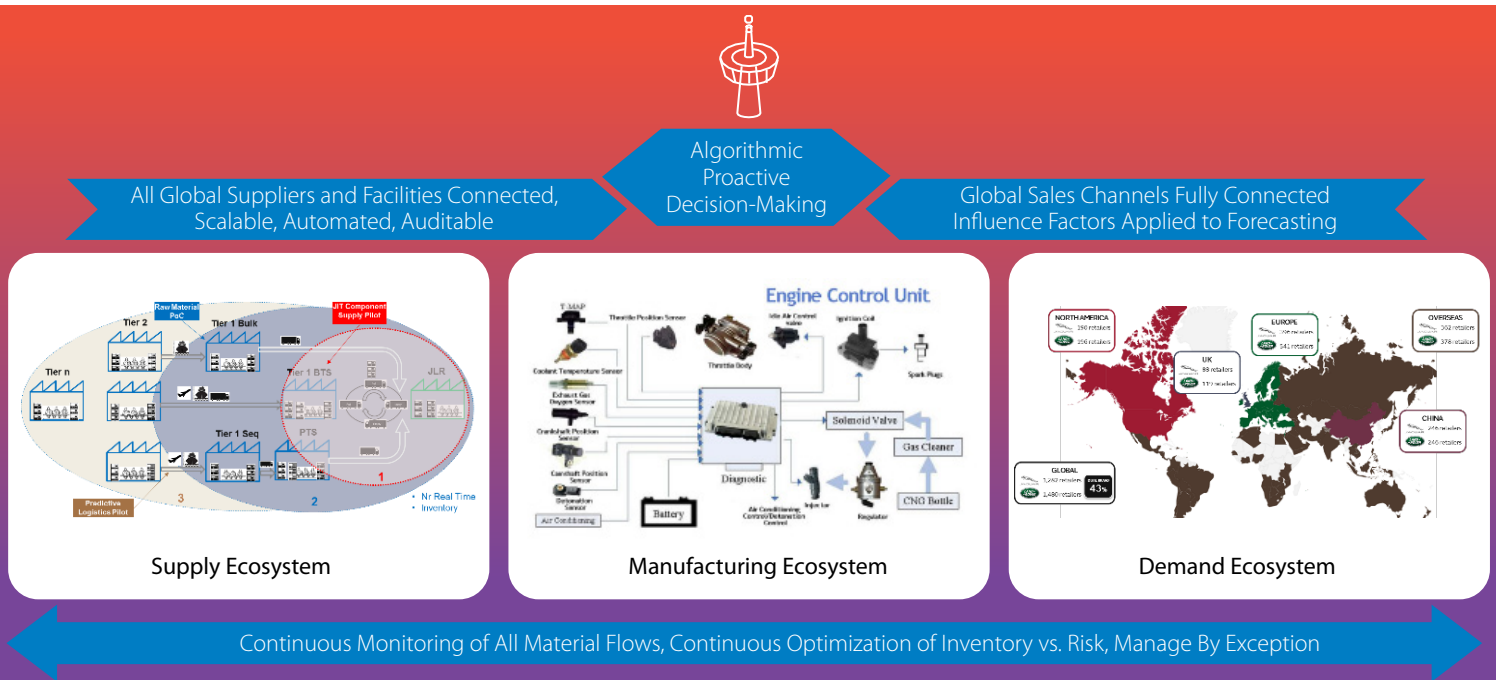


Figure 2: Conceptual view of a connected ecosystem driving resiliency

Executing a directional paradigm shift is fundamental to embracing the journey towards creating a resilient network, as illustrated below:

## 1. Leveraging a linear ecosystem for networks

While the physical flow of goods can remain sequential across planning, sourcing, producing, and delivering, the informational flow need not follow the same path. In the event of a disruption, companies can adopt a connected, collaborative, and cognitive (3C) supply chain framework (see Figure 3) to leverage intelligence across the entire network rather than just from one entity. This will ensure faster recovery from disruptions.



Figure 3: The 3C supply chain framework

## 2. Shifting to a collaboration mindset

One of the big challenges in a multi-tier supply chain is the lack of trust between different entities in the value chain. Smaller suppliers are reluctant to collaborate with powerful tier-1 suppliers and OEMs because of the fear of losing competitiveness.

Digital initiatives fail because any attempt by a tier 'N' player to gain more visibility and transparency into the next tier (N+1), is still being met with suspicion because of past experience. Typically, in the past, OEMs and tier-1 players engaged in volume play tactics, and transparency initiatives have become a means to extract price or service concessions from the next lower tiered players in the supply chain. So, shifting from a coercive or conflict-ridden approach between a powerful buyer and a weak supplier to a more collaborative approach between equals, could be the first step to addressing the trust deficit.

Business behaviors, as observed during this pandemic, seem not only to affirm that a collaboration mindset is the right way to go but also demonstrate that it is achievable. There is a general unwritten consensus that companies which invested in technology and built end-to-end collaborative processes and relationships were able to respond more effectively to the pandemic than those who had not.

## 3. Adopting technologies to create a broader ecosystem

The digital revolution driven by disruptive technologies such as AI, ML, and advanced analytics provides a path for businesses to undertake the journey towards creating a resilient supply chain. Mature and proven technologies such as information networks, blockchain, collaboration tools combined with data, and algorithms can help level the playing field and address the fundamental trust issue through decentralization.

# Four steps to creating a roadmap to resiliency

The roadmap illustrated below can help automotive and industrial manufacturing companies become successful in their journey to resiliency:

## 1. Define the problem

Supply chain disruptions fall under two categories – self-induced due to internal operational ineffectiveness or externally induced through natural disasters, political unrests, trade wars, pandemics, and so on. Some functions of supply chain are more vulnerable to disruptions. Identifying the weakest links in a firm’s supply chain is a critical first step.

## 2. Identify the root cause of the problem

Identifying the core elements that hinder resiliency and bolstering them with data and analytics can address long-term issues. Some key areas to consider include the following (see Figure 4):

- Visibility into the supplier tiers
- Lack of data availability
- Rigid leadership
- A cookie cutter approach, where the success of one place or one experience is stretched to a new environment without due consideration to changing business conditions
- Antiquated technologies



Figure 4: Enhancing resiliency through integrated data and analytics



### 3. Identify collaboration partners across the ecosystem

Collaborating with suppliers, logistics service providers, regulators, and subcontractors across industries can promote efficiency, effectiveness, and profitability. This can be achieved through the following:

- Algorithms can predict problems and provide effective resolutions to ensure an accurate response to disruptive events.
- A cross-functional approach in organizational and technical units for a swift and coherent response.
- Dedicated teams to manage risk with integrated information.

### 4. Create a digital core

A digital foundation that supports predictive, collaborative, and self-healing capabilities is fundamental to building and sustaining resiliency over the long term (see Figure 5).

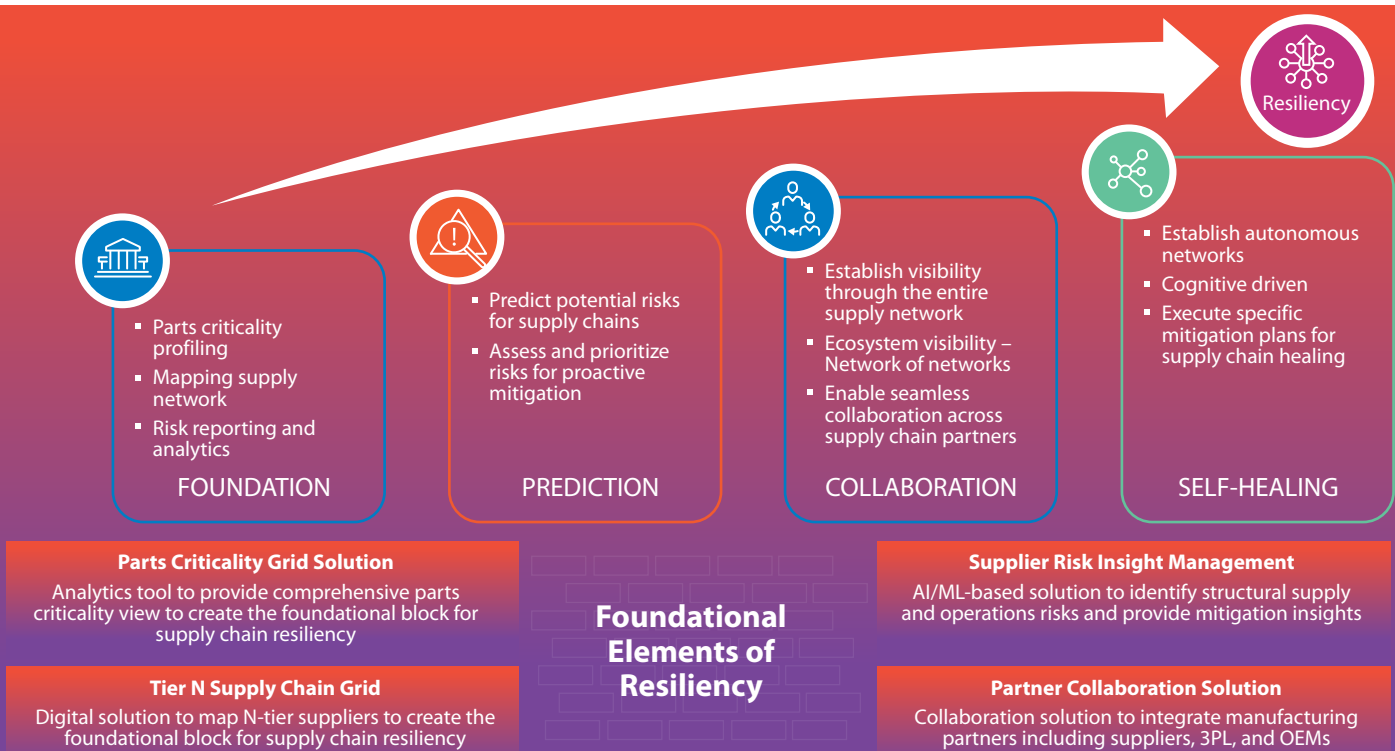


Figure 5: Digital core – Foundational elements driving resiliency

To sum, initiating immediate steps towards resiliency will help supply chain managers optimize operations and stay competitive. Focusing on the building blocks of creating a digital core and collaborating across the value chain will be key to bouncing back from major disruptions. With enhanced digital technologies, risk identification tools, robust information sharing, and even cloudification, industry players can optimize supply chain performance, achieve substantial cost savings, and accelerate growth even during uncertain times.



## About The Authors

### Deepak Mavatoor

Deepak Mavatoor heads the Automotive and Industrial Supply Chain Consulting and Advisory practice in Manufacturing at TCS. He is a passionate supply chain professional with hands-on industry experience. He combines his industry and consulting experience to bring transformational solutions to clients' supply chain issues. He earned his management degree from the Stephen M Ross School of Business, University of Michigan and has an engineering degree from India.

### David Strauss

David Strauss is Global Director, Strategic Partner Development at E2open. David has 18 years' experience working for international supply chain cloud software companies. He has had the privilege to interact with hundreds of supply chain teams within large global companies, across industries, regions, and functions. From project management to solutions consulting and now partner development, David has been wearing different hats, which has provided him with a strong and multifaceted understanding of supply chains.

## Contact

Visit the [Manufacturing](https://www.tcs.com) page on [www.tcs.com](https://www.tcs.com)

Email: [manufacturing.solutions@tcs.com](mailto:manufacturing.solutions@tcs.com)

## About Tata Consultancy Services Ltd (TCS)

Tata Consultancy Services is an IT services, consulting and business solutions organization that has been partnering with many of the world's largest businesses in their transformation journeys for over 50 years. TCS offers a consulting-led, cognitive powered, integrated portfolio of business, technology and engineering services and solutions. This is delivered through its unique Location Independent Agile™ delivery model, recognized as a benchmark of excellence in software development.

A part of the Tata group, India's largest multinational business group, TCS has over 453,000 of the world's best-trained consultants in 46 countries. The company generated consolidated revenues of US \$22 billion in the fiscal year ended March 31, 2020, and is listed on the BSE (formerly Bombay Stock Exchange) and the NSE (National Stock Exchange) in India. TCS' proactive stance on climate change and award-winning work with communities across the world have earned it a place in leading sustainability indices such as the Dow Jones Sustainability Index (DJSI), MSCI Global Sustainability Index and the FTSE4Good Emerging Index.

For more information, visit us at [www.tcs.com](https://www.tcs.com)

## About E2open

At E2open, we're creating a more connected, intelligent supply chain. It starts with sensing and responding to real-time demand, supply and delivery constraints. Bringing together data from customers, distribution channels, suppliers, contract manufacturers and logistics partners, our collaborative and agile supply chain platform enables companies to use data in real time, with artificial intelligence and machine learning to drive smarter decisions. All this complex information is delivered in a single view that encompasses your demand, supply, logistics and global trade ecosystems. E2open is changing everything. *Demand. Supply. Delivered.* Visit [www.e2open.com](https://www.e2open.com)

All content / information present here is the exclusive property of Tata Consultancy Services Limited (TCS). The content / information contained here is correct at the time of publishing. No material from here may be copied, modified, reproduced, republished, uploaded, transmitted, posted or distributed in any form without prior written permission from TCS. Unauthorized use of the content / information appearing here may violate copyright, trademark and other applicable laws, and could result in criminal or civil penalties.

Copyright © 2021 Tata Consultancy Services Limited

E2open and the E2open logo are registered trademarks of E2open, LLC. All other trademarks, registered trademarks and service marks are the property of their respective owners.