



Supply Chains in Unprecedented Times

Building Sustainable Resilience In Supply Chains

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By Gulfröck

Overview

Supply chains are central to the operation of the global economy. Global value chains enable two-thirds of international trade. The plumbing of global commerce has rarely been a topic of much discussion in newsrooms or boardrooms, but the past two years have pushed the subject to the top of the agenda. We were recipients of an unprecedented and uninterrupted period of consistent globalisation YoY for the best part of the last three decades.

The COVID-19 pandemic has exposed structural flaws in global supply chains and has prompted organisations to fundamentally reassess their approach to global manufacturing and sourcing. Companies have started exploring ways to build more resilience into their manufacturing and supply networks, even if that resilience leads to extra costs. With massive value at stake, global enterprises are seeking to mitigate risk, improve supply chain resilience and secure better access to supplies and markets.

This Gulfröck report will examine the current state of global supply chains, the risks and challenges associated with them, and provide a comprehensive guide for companies looking to build more resilient supply chains in the post-COVID-19 era.

Over the past two years, many companies have made structural changes to their supply networks by implementing dual or multiple sourcing strategies for critical materials and moving from global to regional networks. And as companies shift their focus from visibility to improvements in demand and supply planning, supply chain digitisation efforts are also entering a new phase. Global distribution issues and increasingly complex supply chains are forcing companies to modernise the tools they use for forecasting demand and planning how to meet it.

High performing companies have made a step function change to turn their supply chains into true competitive weapons, reaping substantial rewards along the way: Not only do they enjoy above-market growth rates compared with their more complacent competitors, but they have reset customer expectations and, in many cases, are ready to disrupt their industries.

The Shifting Global Sourcing Landscape

1.1 The Evolution of Global Supply Chains

Over the past three decades, global supply chains have undergone significant transformations due to factors such as technology advancements, cost reductions, and expanding trade networks. The emergence of China as a global manufacturing powerhouse in the 1990s and 2000s fuelled the rapid growth of global supply chains for decades. Companies took advantage of lower labor and production costs in developing countries, leading to the creation of complex, interdependent networks of suppliers, manufacturers, and distributors.

North America is the world's second-largest market (with Asia holding first place). However, despite strong regional trade relationships, agreements and interdependencies, it is increasingly reliant on imports from the rest of the world. The value of total imports, excluding natural resources, grew from 26 to 35 percent of the region's gross output over the decade up to 2020, and this growth is accelerating compared with local manufacturing capacity.

1.2 Recent Shifts in Global Supply Chains

In recent years, however, global supply chains have been evolving in response to shifting manufacturing cost structures, advances in automation, rising protectionism, and external shocks such as natural disasters and the COVID-19 pandemic. Companies are increasingly moving toward regional manufacturing and sourcing footprints in order to be closer to end markets.

China remains North America's largest export provider of goods, but its market share has remained stagnant over the last 5 years. In early 2022, recurring COVID-19 infections exacerbated the global logistics crisis, worsened by China's zero-Covid policy and lockdowns in two major manufacturing and commercial hubs, Shenzhen and Shanghai. Despite ports remaining open, these lockdowns disrupted manufacturing, trucking, and logistics operations, forcing carriers to reroute through alternate ports like Ningbo.

As the affected ports reopened, container lines continued to deal with blank sailings at Shanghai and Ningbo, skipping calls, and reallocating capacity to East-West routes to restore schedules. Regional carriers offered new intra-Asia services or enhanced existing loops for additional calls to fill the gaps, while other shippers partially filled the exporter void from Asia. Consequently, from February to April 2022, the percentage of US imports from China decreased

In contrast, Southeast Asia's market share has rapidly increased to ~16% of North America's imports in 2021, led by Malaysia, Thailand, Indonesia, and Vietnam in integrated circuits, phones, and computers. These countries' exports to North America in these industries alone have grown by \$55 billion over a decade, driven by factors such as competitive costs, skilled workforces, easy raw-materials sourcing, free-trade agreements, and government support for industries like electronics.

Additionally, governments around the world are intervening more aggressively to promote domestic manufacturing and secure critical supplies, particularly in industries such as pharmaceuticals, medical devices, and electronics. As a result, resilience and access to critical supplies and markets are emerging as rising priorities for companies.

The effects are clear to see in the shipping industry. Between 2016 and 2019, the average percentage of global containership fleet capacity held up at ports was 32%. However, during COVID, this figure peaked at 37.2% in July 2022. With ongoing congestion and unreliable schedules, global demand surpassed fleet capacity by 10% from late 2020 to early 2022, and prices remained high, exceeding five times their 2019 level according to the Shanghai Container Freight Index. From the end of October 2021 to the end of December 2021, the BDI (Baltic Exchange Dry Index) declined by 40 per cent to 2,832 points and in January 2022 fell to 1,760 points, with the downturn continuing through the early months of 2022. By August 2022, the global supply-demand imbalances had vanished, causing a steep decline in freight rates.

The Ukraine war has also increased supply chain uncertainty, as its effects permeate commodity and financial markets, supply chains, and global production. Consumers face reduced food and energy security, higher inflation, and increased living costs. Ukraine and Russia, collectively responsible for around 30% of global wheat and barley production, one-fifth of maize, and over half of sunflower oil, are key players in the global food market. Additionally, Russia is a leading natural gas exporter and second-largest oil exporter, while Belarus and Russia together export ~20% of the world's fertilisers.

The war in Ukraine and associated economic restrictions have impacted the China-Europe rail route. In 2021, with congested ports and severely constrained air cargo, demand for the China-Europe rail network surged over 30% to nearly 1.5 million TEU. Cargo from China, Japan, and South Korea that relies on the trans-Siberian route is hindered. Meanwhile, new routes, such as the Middle corridor of the Trans-Caspian International Transport Route, are emerging.

Outsized Disruption in Certain Sectors

2.1 Variability in Sectoral Risks

Pressures to build resilient supply chains will not affect all industrial sectors equally. In some sectors, such as the biopharmaceutical and medical device industries, changes in supply chains may be needed if governments mandate local production in the wake of COVID-19. In many other sectors, adjustments will require balancing a number of trade-offs, including cost, time, and risk.

2.2 High-Risk Sectors

Sectors that are heavily reliant on global supply chains or have high exposure to geopolitical risks are most vulnerable to supply chain disruptions. Examples include the automotive, aerospace, electronics, and pharmaceutical industries. Companies in these sectors are more likely to face significant challenges in maintaining resilient and flexible supply chains.

In order to modernise supply chain systems which are heavily overdue for a number of organisations, not all sectors will be affected equally. Industries with highly complex supply chains, such as pharmaceuticals, typically spend four to six years and \$60 million to \$125 million (according to recent SEC filings for large U.S. pharmaceutical firms) to fully implement a new supply-chain-planning system. Industries with less-complex supply chains, such as consumer-packaged goods, can spend half the time and less than quarter of the capital on average.

Quantification: Defining and Measuring Resilience

3.1 Assessing Supply Chain Risks

The first step to improving resilience is to gain a clear view of supply chain risks at the company, business segment, or product level, depending on which level is likely to be actionable for a given organisation. Companies should measure their exposure to disruption on an absolute basis and against their competitors.

3.2 Measuring Resilience

Supply chain resilience should be measured for all three portions of the value chain: Source, Make, and Deliver.

Key metrics for gauging the resilience of a company's supply ecosystem include the degree to which goods are imported, the percentage of suppliers that are concentrated in certain

countries, the share of supplies that are sourced regionally and are close to end customers, the availability of backup suppliers for critical components, and the inventory levels of key inputs.

Companies can evaluate their manufacturing resilience by looking at the percentage of capacity concentrated in certain countries, the amount of production that is outsourced, and whether they have backup production capacity at existing locations in case of contingencies or qualified backup facilities in different locations.

Metrics for assessing the resilience of downstream channels that get products to customers include the share of revenues coming from markets that could be affected by sharp tariff hikes, how much of the distribution network is covered by a single partner, the average lead time for moving a product from a factory to a customer, and inventory levels in the end market.

Strategies for Building Resilient Supply Chains

4.1 Improving Resilience Along the Value Chain

If the supply chain risk is deemed to be high, an array of remedies is available for companies to improve resilience along each of the three value chain dimensions. A company may conclude that it can best meet its strategic objectives by revising, migrating, or regionalising its supply chain.

Bigger buffers and safety stocks are still seen as an important tool for supply chain resilience. A McKinsey & Company research poll showed that 80% percent of C-suite respondents confirmed they increased their inventories during 2021. Strategic inputs and commodities can be retained as buffers by increasing inventory holding. An analysis of almost 300 listed companies found that inventories increased by an average of 11 percent between 2018 and 2021, with the largest increases in the high-tech and commodity sectors.

This has implications for warehousing inventory management including for safety stocks and buffers. In the first quarter of 2022, global vacancy rates in warehouses were at record lows—averaging 3.2 per cent in the United States and 3.3 per cent in Europe. In Seoul and Tokyo, vacancy rates were less than three per cent. We can expect an inherently more interconnected system of warehouse management in the next two decades, expanding the efficiency capabilities of storage management.

4.2 Sourcing Strategies

In terms of sourcing, companies can reduce the risk of geographical over-concentration of their supply base by reallocating procurement within their existing global supplier networks in order to be closer to end markets. They can also convince vendors to shift all or some of their production to alternative locations.

A key lesson can be learned from the world's largest automobile manufacturer by volume. In 2011, Toyota suffered six months of reduced production following the devastating Tohoku earthquake and tsunami. But the carmaker revamped its production strategy, regionalised supply chains, and addressed supplier vulnerabilities. When another major earthquake hit Japan in April 2016, Toyota was able to resume production after only two weeks.

4.3 Manufacturing Strategies

Manufacturing networks can be made more resilient by expanding capabilities at existing factories and adopting a contingency strategy that prequalifies other factories within their networks and backup contract manufacturers that can quickly take on work if some facilities experience disruptions.

During the pandemic's early stages, sportswear maker Nike accelerated a supply chain technology program that used RFID technology to track products flowing through outsourced manufacturing operations. By rerouting inventory from in-store to digital- sales channels and acting early to minimise excess inventory buildup across its network, the company was able to limit sales declines in the region to just 5 percent. Over the same period, major competitors such as Li Ning and Adidas suffered much more significant drops in sales.

4.4 Improving Resilience Along the Value Chain

To improve delivery resilience, companies can re-optimize inventories and stock goods closer to end markets. Closing the industry's current knowledge gaps will require it to increase its surveillance of supply chain participants and its understanding of the physical, financial, political, and social risks they may face

The pandemic accelerated shifts in consumer behaviour and preferences, with more online purchase of consumer goods, which are often transported by container. In 2019, global e-commerce was 15 per cent of total retail sales, but in 2021 had increased to 21 per cent. Shippers, retailers and supply chain managers are markedly reassessing their logistics, with increasing automation and digitalisation. Maritime transport operators have been investing in air freight, final-mile, and e-commerce logistics.

Enhancing Global Value Chains Simultaneously

We identify a number of strategies for enhancing value in a global value chain (GVC):

- *Process enhancement* takes place when companies can execute tasks more efficiently and with fewer defects than their competitors or manage more complex orders. A prime example is Hon Hai Precision (also known as Foxconn), the world's largest original equipment manufacturer (OEM), renowned for its ability to conduct large-scale production on tight deadlines and with highly specific requirements from major electronics brands such as Apple, Dell, Samsung, and Sony.
- *Product enhancement* occurs when companies can provide higher value-added products than their competitors through advanced technology and quality. This also involves the ability to introduce innovative products faster than rivals. Examples include the so-called "hidden champions," firms with significant global market shares in niche products, such as ASUSTek, the creator of netbooks catering to the demand for low-cost, user-friendly portable PCs, and Toyota, which introduced the first mass-produced hybrid vehicle, the Prius.
- *Functional enhancement* happens when companies can offer competitive products associated with higher value-added in new segments of a GVC. For firms specialising in production, this means transitioning into upstream and downstream activities such as design or marketing. For instance, Lenovo developed more advanced R&D capabilities, including the ThinkPad brand, through its acquisition of IBM's PC division.
- *Chain enhancement* takes place when companies can participate in or shift the focus of their activities to new GVCs producing higher value-added products/services. These capabilities include managerial talent, which aids in identifying potential opportunities and threats and enables companies to reorganise their resources and organisational structures promptly. Recent examples include Samsung, the world's largest semiconductor producer, which committed to investing \$20 billion over ten years in new industries such as solar panels, light-emitting diodes (LEDs), and electric car batteries.

Guidance for Managers: Adapting Supply Chains Post-COVID

5.1 Aligning Design Principles with the New Reality

Begin by assessing whether your supply chain is adequate given the new economic and geopolitical realities. Identify exposure to high-level risks and the tradeoffs involved in optimising the supply chain.

Companies must update their supply chains IT infrastructure to gain more transparency in their process. Despite the advantages that modern supply-chain- planning IT systems offer, an overwhelming majority of enterprises still use manual or outdated methods. Supply-chain leaders have hamstrung themselves by clinging to manual systems and antiquated software with limit ability for their systems to communicate with each other.

Over 70% of supply-chain functions rely on the simplest method: Excel spreadsheets. In addition, more than half use SAP's 'Advanced Planning and Optimization', a highly popular but deeply antiquated supply-chain planning application which SAP introduced in 1998 and will stop supporting in 2027.

5.2 Segment the Portfolio by Supply Chain Risk and Understand Performance Drivers

Define key segments within your business portfolio and assess supply chain risks on the basis of many factors, including product, geographical footprint, technology, and exposure to potential policy change. Gauge the current performance of your supplier and manufacturing networks on dimensions such as cost and service levels.

5.3 Identify Levers and Options at the Segment Level

Evaluate all applicable levers for supply chain optimisation according to the profile of each segment and where in the supply chain the largest risks lie. Determine the level of effort required for each action and the impact it is likely to have on supply chain capabilities.

5.4 Aligning Design Principles with the New Reality

For each potential lever, analyse the tradeoffs between geopolitical risk and factors such as production costs, logistics, duties, market access, and resilience. Then select an appropriate approach to supply chain optimisation. Identify key KPIs for resilience: a company could, for example, decide it wants at least 30% of key products or inputs to come from three or more

qualified manufacturing sites in different geographic areas and would like to keep its capacity utilisation under 85%.

5.5 Meeting Rapidly Changing Customer Demands

Customer loyalty has become increasingly elusive. For instance, during the COVID-19 pandemic, 77 percent of US consumers altered their shopping habits, switching stores, brands, or their shopping methods. This shift was primarily driven by necessity. Consumers resorted to online shopping when they were unable to access their regular stores, with two-thirds citing lack of availability as the main reason for brand-switching. The primary beneficiaries of the crisis were often the largest companies that could maintain a steady supply of products to their customers despite challenging operational conditions.

As consumer-generated content starts to overshadow traditional brand marketing campaigns, companies are finding it harder to control demand fluctuations. In the past, a company might have spent months readying its supply chains for a meticulously planned promotional campaign. Nowadays, a single viral video can draw attention from millions of consumers virtually overnight.

The lesson for established businesses is clear: they need to keep pace with consumers. This involves devising innovative products and brands that cater to the evolving needs of diverse consumer groups as these needs arise. It also requires more proficiency in managing complex portfolios of brands, each with unique market attributes, and distributing their products across multiple channels. These demands are also becoming increasingly relevant for B2B businesses, as heightened product complexity and fluctuating demand in the consumer sector filter down the supply chain.

The quest for agility might prompt companies to reevaluate decisions about whether to manufacture in-house or outsource. For instance, in manufacturing, large companies typically retain the production of their steady, high-volume products, relying on co-manufacturers for niche or special projects. However, leading companies seem poised to reverse this trend, investing in flexible core assets and skills that enable their in-house manufacturing to rapidly adapt to changing demands. In some cases, they may even outsource the production of steady, high-volume products to external providers who can offer cost advantages. Simultaneously, in downstream logistics, employing third-party logistics providers might become the most cost-effective way to enhance asset flexibility.

Conclusion

The global supply and manufacturing networks that have served multinational enterprises well for decades have required substantial investments, hard-earned experience, and relationships that took years to build. To thrive and win in the post-COVID-19 global economy and beyond will require building supply chains that are resilient to disruption and flexible enough to capture new sources of competitive advantage.

For business leaders, upcoming priorities include more sophisticated approaches to planning, further adaptation of supply networks, and smarter inventory management strategies. Success depends on effective collaboration among all players, at the national and international levels when tackling bottlenecks in ports and along the hinterlands, especially in landlocked, transit and coastal countries.

Companies must adapt to the new realities of global trade, balancing the risks and rewards of their supply chains, while continuing to innovate and respond to customer needs. By taking a proactive approach and embracing the necessary changes to keep meeting customer's demands, organisations can position themselves for long-term success in a rapidly changing world.

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Printed in the United Kingdom