

Embedded Resilience: The antidote to severe disruptions in enterprise supply chains



By John Gattorna & Deborah Ellis*

Supply chains down through the Ages have always worked best in routine operating environments, but the years 2020/21 have marked the antithesis of these ideal conditions. In fact, the unplannable onset of the Covid-19 virus pandemic in early 2020, quickly engulfed the entire world, and has led to massive health and economic disruptions on a scale not seen in the last 100 years. This type of extreme **disruption** is also the condition most feared by enterprise supply chains.

Indeed, the impact of the Covid pandemic has broken supply chains everywhere, causing massive shortages on the in-bound side of manufacturing, and a 'bullwhip' effect on the demand-side as consumers went into panic buying behaviour. And like the after-shocks from a massive earthquake, we are witnessing, almost daily, examples of follow-on disruptions impacting entire regions and sometimes global markets: petrol shortages in the UK; scarcity of semi-conductor chips for automotive production and many other applications; power outages in China necessitating rationing of supply to industry; huge congestion in ports such as Shanghai and Los Angeles; shortages of shipping containers everywhere; and escalating freight rates on the ocean and in the air as capacity withdrawals and operating restrictions play out. And all contributing to shortages of just about everything that consumers have, up until recently, taken for granted during the *golden growth years* over the last several decades. It seems that the time of reckoning has arrived as the entire world spins into a state of **dynamic disequilibrium** that is likely to take years to recover from.

All this is occurring at a time when the effects of climate change are also bearing down on us. According to Parag Khanna¹, migration will soon be the biggest climate challenge of our time as millions of people try to find new homes. In that sense we may be on the cusp of even more extreme disruptions in the foreseeable future.

In many ways, these phenomena remind us of the '**catastrophe**' theory, first developed by Thom² in the 1960s, and further refined by Zeeman³ in the 1970s. In essence, *a physical, biological or social system may be sitting quietly in equilibrium. Meanwhile, the underlying forces may be changing slowly, causing the equilibrium position to alter gradually. However, a point is reached where that equilibrium breaks down, and the system suddenly snaps into a new equilibrium position, involving a quantum jump or step function that brings with it catastrophic change.* We have been witnessing this very phenomenon happening before our eyes over the last 18-24 months. The big question is: what can we do to mitigate the risk of being caught off-guard by future large-scale disturbances, because they will surely come as night follows day? The only thing we don't know is exactly in what form or when.

In a word, businesses (and governments) everywhere must go all out to embed **resilience** in every important supply chain on earth; that is the only **antidote** for such large-scale, unplannable disruptions.

But where to start is the big question?

In our view, the supply-side of manufacturing has been under-represented in the advances in the supply chain of recent years and should now be the focus - and be brought under more systematic and coordinated management. Why? Because this is where most major disruptions originate. Covid-19 supply chain impacts started on the supply-side, and then migrated to the demand-side. The Procurement function must begin taking a more contemporary (versus compliance) approach to their entire supply base, and in particular, segmenting suppliers according to their unique capabilities, expectations and respective situations. Long gone are the days of unforgiving negotiations with the sole purpose of achieving lowest purchase prices. We are now in a new world where *effectiveness*, end-to-end *productivity* and *risk management* are more important than simple purchase price for long-term business continuity. The objective is always to more precisely align supply patterns with those of the target final markets, and where this is not possible, to pro-actively decouple processes to mitigate risk or change cadence. This is a long way from the one-dimensional price/compliance mindset that has dominated the procurement function in recent years. *Precision* is the key word here.

Along with risk and quality accreditation, emissions reduction will also factor more heavily in future procurement decisions, and Procurement teams will be expected to reach right back beyond Tier 1 suppliers, to Tiers 2, 3, and 4, where many potential surprises lurk as evidenced by the floods that devastated Thailand in 2011, seriously impacting thousands of factories, including a large proportion of the parts suppliers to Japanese car manufacturing plants based in Thailand and beyond.

So, a fundamental change in approach is now necessary to lessen the impact of future disruptions. These changes could include setting up key **alliances** with other selected parties inside and outside our particular industry; diversification of supply sources across geographies; risk management using time-to-recover (TTR) modelling; and finding new partners willing to collaborate on major initiatives around capacity management, including

sharing of capacity on transport modes and in regional consolidation centers (RDCs). Working with like-minded parties in the channel is going to be critical to dampening the negative effects of future dislocations in supply chains across the world; and these parties may even be competitors at times. In this context, the reported collaboration of Walmart, Inc and Home Depot, Inc in jointly chartering container ships, is not as fanciful as it might first appear.

Whatever the case - we have to think differently and think big to match the scale of potential disruptions that lie ahead, and all necessary arrangements have to be in place well ahead of the time of actual need. To achieve all this, and more, we consider it essential to incorporate the Procurement function with the demand-side of the business - and to transition to a true end-to-end (E2E) integrated supply chain format, something that seems to have eluded us despite high aspirations for the last 20 years. A Chief Supply Chain Officer (CSCO) is already likely to be overseeing manufacturing, and outbound logistics, so why not procurement and in-bound logistics as well to complete the picture, and to enable the holistic approach so essential to balancing supply and demand under duress. Some of the best global organisations are already moving in this direction.

Turning to the demand-side, the requirement of ever-shorter lead-times and more service options, a direct spin-off from the consumer eCommerce revolution that is taking place before our eyes, is a challenge for many companies, especially the more conventional industrials. But there is no choice in this matter; the genie is out of the bottle, and expectations of buyers have been reset. Entire supply chain networks will need to be re-designed and re-purposed to fit the new demands of customers and consumers.

We consider the most effective way to achieve this is to start with segmenting the target customer base, and then using the results to inform any reconfiguration of service offers and the internal processes and infrastructure that support them. The secret to success in this endeavour is to use the target customer base as the *frame-of-reference*. If this principle is followed, the risk of costly misalignment will be substantially reduced.

In a volatile operating environment, capacity management, in all its various forms, will be one of the most important factors that everyone in the E2E supply chain will need to be fully focused on.

As part of this, the tendency for customers and consumers to over-order in volatile times also needs attention and a clear strategy. An allocation system that defines priorities, which for most organisations should include favouring loyal, collaborative customers over those that are simply behaving opportunistically, is a good starting point.

In addition, a full-time dedicated team and system that is monitoring the progress of every order along the E2E supply chain, in real-time, from inside a Control Tower facility will be critical to managing risk and improving customer satisfaction. This facility will work at both the day-to-day executional level, as well as the more aggregated tactical planning level. A 'ready-to-run' model, providing a tactical scenario-testing capability will become a core capability, especially in times of significant volatility where conventional forecasting methods are untenable.

Ultimately, just how resilient an enterprise is will largely boil down to its speed of decision-making. If enterprises have done the hard yards, sorted out their master and transactional data, developed a sophisticated data analytics capability, implemented a technology

integration layer to bring all the legacy systems together, and in the process developed E2E visibility through digitalisation, then ever faster decision-making cycle-times will be possible, much of it automated with the arrival of AI/ML supported **cognitive automation**.

Supplementing the digital effort, enterprises should seek to increase the *clock-speed* or *rhythm* of the organisation more generally, reducing time-consuming bureaucracy, refining processes, and hiring talented personnel who are prepared to take measured risk by making faster decisions, rather than follow the safe, slower path via consensus. Empowerment and trust must replace command-and-control or consensus styles of leadership that are better suited to more stable times. Indeed, a lot must change before we are truly ready to face future disruptions with confidence. Fortunately, all the tools are available and ready to go, and the science for managing supply chains is steadily increasing; it's now more a matter of those in leadership roles in commerce, industry, and government having the Vision and the Will to act.

If the chaos and disruption of Covid has taught us anything, it is that if we are to enjoy rising standards of living over the next few decades, then the effective functioning of the omnipresent supply chains we are so dependent on, is critical. Once they break down, Society at large suffers big time. Hopefully, governments everywhere have noted this reality from the Covid experience of the last few years, and will invest more in supply chain infrastructure and systems in future, especially the supply chains that underpin the operation of our public health facilities. But those with the biggest responsibility to 'walk-the-talk' will be the leaders of the Global Top 1000 companies. Together as an economic block they can make a huge difference for the good of humanity, even as governments hesitate to make the big decisions on subjects like climate change, environment, social and governance (ESG) issues, migration, diversification of sources of supply, and local manufacture of strategic products and components.

Time is running out, not only to make our supply chains energy efficient, but to configure them as **disruption-proof** as possible. If we don't start the journey now, we will leave behind a dark legacy for future generations. It is inexorable that the combined supply chains on planet Earth are in effect the *central nervous system* of our global village; they must be maintained in good health if we are to grow economic prosperity for all mankind.

¹ Parag Khanna. In *FutureMap Insights*, a Newsletter on LinkedIn, Mon 4 October, 2022

² See Thom, R., *Stabilite Structurale et morphogenese*, Benjamin, New York, 1972

³ See Zeeman, E.C., *Catastrophe Theory*, Scientific American, 234, IV, 1976, pps. 65-83

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