Supply chains around the world are being transformed. External pressures, technology trends and internal evolution are prompting companies to reevaluate their networks to determine how their future supply chains should be structured, both in terms of capacity and capabilities. What should you do now? A good first step is to consider the broad ongoing trends that will affect the supply chain of the future. These can be grouped into four main categories. Let’s take a look at each in more depth.

**Emerging technologies.** Drones, autonomous intelligence and robotic automation will eventually transform warehousing and transportation, which will create networks that may look and operate very differently from those of today.

**Measure impact on existing supply chain**

With these broad trends in mind, organizations must constantly track select metrics like warehouse utilization levels, actual customer service level, cost to serve/profitability of product categories and use of stop-gap measures to determine if there is an ongoing impact on revenue growth and operating margin.

It is important to ensure that operations track and have visibility on these metrics across the supply chain because these metrics will provide an indication that negative business impacts may be imminent. Operations should not only track and generate reports on the metrics, but should also have the channels to communicate the resulting impacts to the business to the C-suite.

Sales and operations planning (S&OP) is a crucial initiative that many leading organizations are implementing to ensure even wider visibility on customer impact. The next evolutionary step in S&OP is to leverage real-time visibility to better align on expected and incoming demand, which equips the organization to shape and serve that demand.

These metrics must be monitored often to plan necessary changes to the supply chain, as the...
lead-time to these changes could range from a few weeks to several years based on the level of network upgrades needed.

**Determine gap in the business strategy**

Before any supply chain redesign, it is crucial to determine if the company's business strategy can be supported by the existing supply chain network. Based on how the company is oriented—whether it is service oriented, cost oriented or a hybrid of both—the existing supply chain network could be out of sync with the business strategy. If the company has recently gone through a strategic transformation, it is crucial to capture the impacts of the new strategic direction on the supply chain. Even better, make supply chain redesign part of the strategic transformation because the supply chain is a strategic enabler.

**Consider factors affecting supply chain design**

Examining the external trends, measuring key supply chain metrics and evaluating the network against the business strategy usually determines that the supply chain requires some, or even major, overhaul. The following four main factors need to be delved into further.

**Factor 1: The existing supply chain.** Warehousing, transportation and business impact metrics will reflect the current state of the existing supply chain. To develop a new network, it is important to establish the baseline of existing capacity and capabilities. That necessitates a thorough study of the network, with site visits to discuss existing problems and projected challenges. Apart from determining capacity, an important aspect of this baselining exercise is to map out the technological capabilities of the network. With new WMS, TMS and automation technologies available, it is crucial to compare current state capabilities against these technologies to determine the gap and business impact.

After baselining, the organization will have to determine future volume and project when and where the network will be at capacity. If required, the previously mentioned site visits can also help determine opportunities to push expansion/reconfiguration through quick win solutions. External best practices should also be evaluated to determine other implementable quick wins to relieve capacity constraints in the short-term.

**Factor 2: Product, customer and channel.** Understand how customer demand is changing by understanding the marketplace. In Consumer Packaged Goods (CPG), for example, DTC, a channel where companies sell directly to customers rather than through intermediate retail outlets, is booming. Unilever, for instance, acquired the Dollar Shave Club while at Nike, DTC accounted for 70% of growth in 2017. Evolving customers will result in changing channel and product preferences. It is important to determine how flexible the current warehousing and transportation infrastructure is to be able to serve the evolving customer and product mix. If significant changes are required to the supply chain, the organization must plan out both short-term strategies to meet customer needs and a long-term plan that is flexible enough to adjust to changing customer needs.

**Factor 3: Organizational capacity and capability.** The organization's capacity to support a future-state network must be taken into consideration as any ideal theoretical supply chain will remain just that without the organization having the following capacities:

*Data and analytics.* To design a supply chain for the future, it is important to plug any data gaps, including knowing supplier and customer location, customer forecasts, transportation costs and realized raw and adjusted service levels, among other key inputs. The firm should be able to trust the data being reported and be able to access it readily to perform the required analytics.

*Financial strength.* The organization’s appetite for financial investments in the supply chain must be identified. Often supply chain spend is seen as a cost of doing business but the C-suite may occasionally demand a financial return on the investments. The business impact metrics mentioned previously can be useful to make this business case, if required. Additionally, it is good practice to re-design for phased Capex spend regardless of whether the firm has been investing regularly in their supply chain. This not only spreads the investments over years but also allows for certain metrics to be achieved before further investments are required. An alternative to building-to-own would be leasing warehouse space (DC Capabilities), as the marketplace evolves to ensure flexibility in business strategy execution while keeping Capex spend low. With the booming sharing economy, the lease option could become increasingly attractive even at the cost of higher Opex.

*Design process expertise.* The organization must have the expertise to build an optimized model, run scenarios and objectively assess tradeoffs. Either through internal or external experts, the organization must have the ability to gather baseline data, model the network and its intricacies, determine scenarios to run, and be able to bubble those up to operations, sales and the C-suite to make actionable decisions.

*Implementation process expertise.* The organization needs the expertise to refine the network design based on what is implementable. These should ideally be the same individuals who can lead the execution of the new network, also...
building the new capabilities the supply chain needs.

Communications. Build internal consensus and manage change for the success of the project. Sensitivities around workforce consolidation, speculation around timing and fluidity of the decision require the right structure and communications protocol to ensure morale is sustained while avoiding PR disasters.

Factor 4: Execute the supply chain re-design process. Once it is determined that the organization can implement a new supply chain network, the re-design process, at a high-level, should follow these 10 steps:

1. Conduct further site visits and talk to sales and operations to understand capacity and capability gaps. Thereafter, interview all stakeholders in and outside the supply chain for pain points and gaps.
2. Model the network baseline.
3. Refine the baseline supply chain model through internal data collection and analysis to ensure that the current state is accurately captured before any redesign is undertaken.
4. Project future volume for various scenarios.
5. Using real options pricing methodology (i.e. mapping different probability weighted projected outcomes based on different input assumptions), determine the ability to serve future volume and the resulting financial implications.
6. Design the best greenfield network for the business strategy and customer requirements.
7. Compare with the existing network and design a realistic network that fully utilizes existing assets by modeling additional capacity and capabilities and determining associated Capex and Opex costs. Involve the supply market and their assets as inputs into the network design.
8. Discuss with all stakeholders and determine if the financial and strategic implications of the new network are worth the costs.
9. Develop a phased implementation plan and add trigger points to enable flexibility in responding to trends and volumes.
10. Develop the messaging and communications protocol to ensure smooth execution.

The emergence of new technologies will fundamentally change supply chains across industries, and executives need to anticipate these changes to remain competitive and deliver value.