Dynamic Network Management:

The “WHAT’S NEXT” in NETWORK OPTIMIZATION

Successful supply chains use technology, data, processes and communication to create a truly dynamic supply chain solution that is optimized on an ongoing basis.

BY PAN CHEN AND NIKHIL THAKER

“Change is the only constant in life” [and in supply chain networks].

More often than not, tasks that should be simple in theory are, in fact, challenging. A routine commute from home to work can quickly become difficult and circuitous if unexpected lane closures and detours are presented. Inclement weather and uprooted trees in the road may cause more reroutes on the drive home.

While a supply chain manager’s goal is quite simple in theory (get the right products to the right location, at the right time, for the best price possible), often times achieving this goal can, in fact, be difficult. Despite the best laid plans, changing variables can affect supply chain efficiencies and present challenges to supply chain managers just as construction, traffic and detours can disrupt a commuter’s usual driving route and force him to find an alternative path in real time so as to minimize the risk of arriving late to work, missing a meeting or finding himself stuck in gridlock traffic.

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The "WHAT'S NEXT" in NETWORK OPTIMIZATION
Unfortunately, many organizations are not as well prepared to respond in real time when confronted with changes to their supply chain networks—and change is the only constant in life and supply chain networks. They struggle to adjust their networks to mitigate the effects of changing variables. While the commuter in the above example can simply select another route to work or home, stopping, starting...

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...and rerouting entire supply chain networks is not as easy or without cost, especially when the changes to be made are significant, such as identifying a new supplier in the middle of a promotion. Organizations also may lack the discipline or technology to routinely monitor for minor incidents and changes along the network that could signal an impending major event.

This is not to suggest that many organizations are not already implementing strategies and setting up processes to ensure their supply chain networks are optimized to achieve their defined business objectives. On the contrary, many are. They are taking the time to design networks where suppliers, manufacturing facilities, warehouses and distribution centers are optimally arranged. The process is often complex, requires organizations to make many assumptions and changes are most likely capital intensive. Because of this, organizations typically undertake these network design studies and optimization exercises only once every three to five years.

The challenge with this “fix it and forget it” approach to network design is that networks are not static and companies are vulnerable to risk when variables affecting the supply chain network fluctuate drastically—and inevitably they do. In a global market characterized by instantaneous changes, it is critical to design a supply network flexible enough to respond to changes in supply availability and demand fluctuation. When organizations conduct a network study every few years and map where assets along the chain will be located, they are operating on assumptions about transportation costs, demand patterns, material costs, etc. As market conditions change over time and reality diverges from the assumptions that formed the framework for the initial network design, inefficiencies, waste, cost and brand degradation can result. Organizations soon find that conditions have changed and what was once an optimally designed network is now suboptimal.

Compare these organizations to businesses that respond quickly and nimbly to variables affecting the supply chain. Why are some organizations more adept at managing their supply chain networks and resilient to shifts in supply and demand?

Organizations successful at using the supply chain as a competitive advantage use technology, data, processes and communication to create a truly dynamic supply chain solution that is optimized on an ongoing basis. This dynamic approach to network optimization enables organizations to maximize the utilization of their supply chain assets and reduce costs without opening or closing additional fixed locations.

**Consistent variability**

Consumer demand is typically the most rapidly changing variable within supply chains, and predicting, analyzing and responding to it is extremely complex. Demand changes are faster and more frequent than ever because consumers expect instantaneous response and reaction. Most companies can create generalized forecasts of what their businesses will look like over the next 12 to 24 months based on trends, but it is tough to anticipate what will drive these trends and how they may change throughout the year. Having the ability to adopt new plans and make changes, from shifting logistics within an existing supply chain to moving different products to different locations to keep up with changes in demand in real time is important.

Consider consumers’ growing interest in acai...
bowls and poke as evidenced by the number of images of and comments about these foods on social media. As these foods grow in popularity and are promoted by influencers (think friends, celebrities, chefs, medical professionals), they are likely to affect the supply chain. As demand for these foods increase, availability and price likely will be affected. And, while the costs on a per-product basis may not be significant, the impact on profitability could be substantial when multiplied thousands or even millions of times for each production unit.

In addition to changing consumer demand, which is affected by outside influences such as seasons and holidays as well as social media, flash trends and sales, there are countless other variables that should be evaluated on an ongoing basis to ensure an optimized network. These include oil and gas costs, changes in supplier base (acquisitions, plant closures, market exits, etc.), carrier capacity and availability, and processing capabilities of assets such as distribution centers. And, there are some variables such as geopolitical issues, weather related transportation disruptions and natural disasters that are uncontrollable, meaning a system must be able to adapt regardless of consumer demands and trends.

Monitoring supply chain networks on a regular basis means being vigilant to variables at a granular level and perceiving the nuances that signal more ostensible change is about to occur. Dynamic network management requires that organizations detect and react to granular changes in a timely fashion before they noticeably affect the network.

**Steps to achieve dynamic network optimization**

Optimizing networks requires companies to take different approaches to manage the characteristics of their commodities or goods. Implementing a dynamic network approach means having processes in place for monitoring supply and demand information on a monthly, weekly or even daily basis, having the technology to provide data in real time and having consistent processes of communication between marketers, planners, supply chain managers and partners throughout the supply chain.

Although there is no single approach to executing network optimization, there are general steps that should apply to most organizations across various industries. Each step is dependent on the efficiencies of data collection, strategic processes, and clear and consistent communication across all channels.

**STEP 1: Incorporate flexibility**

Organizations should adopt a flexible mindset from the start, anticipating and planning for variability in the initial network design process and ongoing. As the late Spencer Johnson wrote in the allegory “Who Moved My Cheese?” change happens and the best course of action is to accept the inevitability of change, anticipate, monitor and adapt to change; then, change and enjoy it. Perhaps it is foolish to expect organizations to enjoy changes that affect their supply chain networks, especially when change has the potential to negatively affect profitability and brand. But, accepting the inevitability of change is necessary and should influence an organization’s approach to network design and management.

Whenever possible, companies should strive to incorporate as much flexibility as possible when constructing the design of supply networks. This can take the form of utilizing multiple suppliers rather than just one and drafting supplier and distributor contracts with ranges rather than precise targets of product volume, market shares or service levels. Or, this can simply depend on setting clear expectations that the company requires flexibility from its supply chain partners, in the form of openness to changes brought about by shifts in underlying business or broad market conditions.

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STEP 2: Define scope
Organizations should define the scope of their supply chain capabilities and determine the metrics they will monitor. These may come in the form of volume metrics (rate of change in the regional demand for a product), supplier share metrics (contract compliance), freight cost metrics or other metrics that can point to underlying changes in network parameters.

STEP 3: Identify relevant data sources
Sequencing out the supply chain network, companies should determine where their information sources lie and collect the relevant data necessary to monitor the network as well as analyze and implement changes. Key areas to define relevant data may include: Product volumes, item hierarchies and category definitions, suppliers, business awards and parameters, product costs, current network structures, current freight rates and current product flow paths.

STEP 4: Develop a network monitoring platform
Organizations should collect relevant data from the information sources identified throughout the supply chain. Working from a single source of truth is crucial to the overall health of the network and to ensuring visibility and promoting collaboration across the chain. When everyone has the same information, it is easier to see where issues are likely to arise and to make decisions that mitigate the impact on the chain. Companies can summarize the metrics in consistent and concise dashboard reports. Once the dashboards or reports have been produced, it is important that a company develop automated processes to generate them on a consistent basis. This constant flow of new information ensures the process remains dynamic.

STEP 5: Prioritize and optimize
Organizations should regularly review the monitoring dashboard reports with key supply chain partners to develop and maintain a consistent flow of information. This will assist in prioritizing where to optimize. Next, define the scope and identify constraints of the optimization based on monitoring results. Align with supply chain partners on lead times for implementation and the prioritization of optimization within broader project commitments. Finally, companies should execute the optimization process, validate the results and review the associated proposed changes with the key stakeholders. Organizations should repeat this as necessary for additional product categories or areas according to monitoring results.

Consider a major foodservice provider that was experiencing regional shifts in consumer preferences and demand for its products. These shifts in demand caused the percentage of category volume serviced by each of the foodservice provider’s suppliers to shift, skewing costs and capacity. Dashboard reports gave category managers total visibility into how much product was coming from each supplier and enabled them to quantify the degree to which the suppliers had drifted from their contract market shares. HAVI, the organization we work for, constructed supply chain optimization models to determine the most preferable network changes to rectify these imbalances. By rebalancing supplier market share such that nearby distribution centers likely would have enough demand to meet the supplier’s designated national market share, and thereby reducing related product and distribution costs, we helped the foodservice provider save 2% of overall category spend without additional capital investment from supply chain partners.
**STEP 6: Implement changes**
During this step, organizations should review and implement changes based on the relevant data they have collected and analyzed. Once data is collected, it is then important to put changes into practice by pulling specific levers to optimize the company’s supply chain. Examples of information processes and changes necessary to optimize a network range from different modes of transportation to modified purchase agreements and different types of suppliers. In the example of the foodservice provider above, we leveraged the geographic locations of the supplier plants to assign “regions” of the product’s network in a manner conducive to each supplier’s national market share targets. A supplier with a plant in Nevada, for instance, received assignments for West Coast distribution centers with enough demand to meet the suppliers designated national market share target.

**STEP 7: Identify flexible partners**
Organizations should identify partners that have the flexibility to meet their changing needs. With so many variables, it is critical to have supply chain partners that can work with the company to respond to variations such as changing oil prices, fluctuating consumer demand, labor strikes at ports, or even help to source and ship goods that the company might not traditionally manage. Remember, an optimized network is not simply about getting the products to consumers, it is also about getting the materials to the manufacturing and/or assembly points.

It is essential to complement new processes and technologies with clear organizational goals and open communication with marketing, supply chain, suppliers, distribution and consumer facing groups. Transparency with partners and shared access to information is important for capitalizing on real-time optimization opportunities identified through real-time data analysis. Aligning with financing and leadership or sponsorship support ensures the success of the new process.

**Strategic advantage instead of a cost center**
Supply chains can and should be a strategic advantage rather than just a cost center. Dedicating time and resources to properly understand the critical drivers of cost and value represents a necessary first step down this path. As the market continues to evolve and become more dynamic, it is important for companies to evolve the management of their supply chain assets from a static and traditional approach to a dynamic system in order to achieve defined objectives from a cost and efficiency standpoint.

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Dynamic network management, where companies are making decisions that allow them to adjust and adapt proactively on a regular basis through optimization, is essential. Supply chains work best and most cost efficiently when they utilize consistent processes and minimize variations in supply and demand. The goal is to achieve those efficiencies. But also, to be able to adapt when the environment that businesses operate within changes. A critical ingredient to adding value is the frequent interaction and collaboration with business teams.

Infrequent network design studies and intermittent monitoring of demand shifts are never going to yield optimal supply chain efficiency. That is because variables are capable of fluctuating drastically and frequently and they demand equally as quick evaluation and response. Companies must be able to respond quickly and nimbly to variables and this is achieved through proactive, regular monitoring and collaboration and by adapting plans in response to dynamic market conditions.

Network optimization is complex, but for organizations that commit to the time and discipline that it demands, their supply chains become a competitive advantage. Constant small revisions and tweaks made to the system can have a significant impact on the overall network and enable companies to drive top-line business growth and profit margins.