

Best Practice – Supply Chain Resilience

Empfehlung des



"Building Resilience in Supply Chains – Global supply chains and transport networks form the Backbone of the global economy, fuelling trade, consumption and economic growth. Disruptions to supply chains can prove costly and sometime even endangers the survival of a company."

Source: Supply Chain Risk Initiative (SCRI), World Economic Forum, Davos

Dow Chemical Co. Adopts a New Model for Supply-Chain Resilience

The company turns to a concept developed at Ohio State University to buffer itself against any number of potential disruptions that might affect customer service and the continuous flow of product.

For all the effort that companies spend on predicting the future, there's no magic formula that can foresee which disruption will occur next. The one sure defense against the unknown lies in the ability to react quickly to whatever happens. Hence the renewed focus by many businesses on supply-chain resilience.

One of the leaders in that area is The Dow Chemical Co. It has adopted a new framework for assessing supply-chain risk on multiple fronts. The initiative is helping the company to make the best use of fixed assets and working capital, especially for supplier management.

Dow began with a model known as Supply Chain Resilience Assessment and Management (SCRAM), developed by Ohio State University. Researchers from Dow's Supply Chain Technology Center adapted the framework to meet the company's specific needs. In the process, Dow came up with a simulation tool for testing the resilience of its supply chain to any number of potential disruptions.

Even within a global multinational like Dow, big efforts start small. The company first adopted SCRAM for its Glycol Ethers P-Series family of products. These are chemicals used largely for protective coatings for industrial, automotive and architectural applications. The P-Series Glycol Ethers are also deployed extensively in solvents and cleaning formulations. The group of products accounts for annual North American sales of about \$114m.

The supply chain for the Glycol Ethers family is complex enough on its own. A workable resilience model had to account for internal production processes; external co-producers; a variety of distribution locations; export shipments; alternative suppliers, both local and offshore; raw materials and rigorous quality standards for finished goods.

Dow defines resilience as "the capacity to survive, adapt and grow in the face of turbulent change." As led by supply-chain analyst Shannon Hemmelgarn and oxygenated solvents global supply-chain director Jennifer McIntyre, the initiative was broken into three components: assessment, resilience testing and implementation.

Strengths and Weaknesses

Proper assessment requires that a business have a solid grasp of its strengths and weaknesses. The SCRAM framework is designed to do just that. It defines two major categories, capabilities and vulnerabilities, then evaluates each by way of questions posed to appropriate team members. Capabilities might include flexibility in sourcing, manufacturing and fulfillment; capacity; efficiency; visibility; adaptability, and the like. Examples of vulnerabilities are demand turbulence, deliberate threats, external pressures and resource limits.

Each term is defined, then followed by questions which are intended to reveal the current level of probability for that particular area, along with the company's ability to deal with it. Respondents' answers are combined to create a composite score. In each case, the potential vulnerability is balanced by Dow's corresponding capabilities. The exercise uncovers any imbalances in the company's ability to cope with disruptions. It also defines a "zone of balanced resilience," the perfect middle-ground between an erosion of profits caused by excessive capabilities, and the exposure to risk caused by vulnerabilities from which the company isn't protected.

The composite score for Dow's North American Glycol Ethers products was fairly positive - it showed capabilities slightly outweighing vulnerabilities. That conclusion would form the basis for subsequent efforts to test actual resilience and uncover the most dangerous vulnerabilities. In particular, Dow wanted to assess the likelihood of a production site shutdown, raw-material supply outage, or raw-material allocation

shortage.

The Glycol Ethers resilience model was further broken down into raw materials supply, manufacturing, tolling, financials, customer demand and terminals/warehousing. At the testing stage, Dow applied iThink modeling and simulation software to assess resilience at each defined point of risk. By simulating a manufacturing outage, for instance, the company could see the stockouts that resulted further down the chain. The impact on customer service was highlighted by the use of green, yellow or red signals for each account, all laid out on a series of dashboards.

The tool can help to uncover dynamics within a network that might otherwise not be visible. For example, a shortage of raw materials might have a greater impact on one distribution location than another. Dow was determined to identify precisely where those vulnerabilities were most likely to occur.

Some Unexpected Results

While no system can completely erase a company's vulnerability to unforeseen events, the SCRAM model allowed Dow to make significant progress in that direction. In some cases, it was able to gain a better understanding of alternative sourcing strategies that were already in place. The model even drilled down to seemingly minor events, such as a production site raising the fee for renting an on-site storage tank. Dow discovered that the increase would have a negative impact on customer service, so it released the tank.

According to Hemmelgarn and McIntyre, the company saw a 500-percent return on its modeling effort. It also identified a potential \$1.1m in savings through the redeployment of assets and working capital in line with the model's conclusions.

In the critical area of customer service, Dow managed to maintain a 95-percent service level during simulated disruptions. At the same time, it boosted both flexibility and reliability through the implementation of dual sourcing strategies and changes in order size. That came as something of a surprise; Dow hadn't intended the resilience model to aid in the development of future business strategies.

Having successfully tackled resilience in the Glycol Ethers P-Series product line, Dow has set out to extend the use of the model throughout the company's global operations. Hemmelgarn and McIntyre note that the conclusions yield strategies that can be applied to multiple product lines, as Dow seeks to buffer itself against transportation delays, material shortages, natural disasters and other major supply-chain disruptions.

"The resilience work process has also been employed in numerous other businesses," Hemmelgarn and McIntyre note, "and is expected to yield an even greater impact as these efforts mature and yield additional measurable results."

Quelle: <http://www.supplychainbrain.com/content/research-analysis/supply-chain-innovators/single-article-page/article/dow-chemical-co-adopts-a-new-model-for-supply-chain-resilience/>