



How Chemical Manufacturers Gain Agility & Lower Cost to Serve with In-Transit Visibility

WHY SUPPLY CHAIN AGILITY IS A COMPETITIVE EDGE

Four factors have made the job of chemical supply chain professionals increasingly difficult.

First, there has been tremendous **consolidation** in global chemical manufacturing over the last decade with mega mergers and acquisitions such as Bayer/Monsanto, Dow/Dupont, Sherwin Williams/Valspar and ChinaChem/Syngenta. Acquisitions, mergers and divestitures (also prevalent) drive rationalization and optimization of sourcing and distribution networks.

Second, the innovations in shale oil and natural gas drilling and fracking over the last ten years in the U.S. have nearly doubled U.S. output¹ of key petroleum products, driving dramatic price decreases and **overall global price volatility** for those feedstocks. Since some form of petroleum is a precursor chemical for many process manufacturers, the U.S. supply of shale oil and gas has affected a large portion of the global chemical manufacturing industry. It has also increased traffic through the Panama Canal and prematurely congested the port of Houston.

Third, there is the impact of massive **supply chain disruption** from repeated fires and explosions in plants in China and elsewhere. These accidents shut down some of the largest manufacturing plants in the world. Those plant shutdowns have left process manufacturers scrambling for alternate supply or to relocate distribution centers.

Finally, **rapidly changing tariffs**, led by the trade tensions between the U.S. and China, require almost daily calculations of logistics costs for well-established trade lanes.

Having tools that provide information to enable rapid reaction lets an organization compete by taking advantage of opportunities and mitigating risks.

All four factors—consolidation, feedstock price volatility, supply chain disruption, and unstable tariff requirements—may each require companies to rapidly re-plan their transportation network of supplies and finished goods.

Today's Tools Leave a Data & Analysis Gap

Most chemical manufacturers have robust tools for maintaining high plant utilization and matching product supply and demand. In contrast, the data and tools manufacturers have at their disposal today to understand the location and condition of their high-value products in-transit are quite limited. In part, this is because the relationships with carriers or third-party logistics providers (3PLs) are primarily transactional. The carriers or 3PLs they use—which are vital to product distribution—do not rely on tools to continuously improve on-time, in-full (OTIF) delivery for manufacturers, at the lowest possible cost.

A recent Gartner survey of chemical manufacturers concluded, “the chemical industry lags every other industry (within Gartner's supply chain benchmark database) in service with median delivery performance of 87% on time in full.”²

Typically, bulk transport and even specialty hazardous goods carriers rely on standard Electronic Data Interchange (EDI) messages to provide information on the status of products in-transit. These messages are not real-time. In fact, they can be sent hours or days after a milestone has passed. **Because they are often human-generated, they are error-prone and perhaps not even objective.** (If there is a penalty for late delivery, self-reported delivery times may not be the best data source.)

Unless a manufacturer has built a system to compare performance trends, within and between carriers, routes, regions and products, it is nearly impossible to have the data required to review delivery and inventory performance. It is even less likely that companies have the data necessary to look for areas where there might be improvement opportunities.

BETTER IN-TRANSIT TOOLS LOWER YOUR FIRM'S COST TO SERVE

Cost to serve is the analysis of all cost factors that go into the service of a customer or production of a product. Basically, the cost to serve is sales value of goods minus the combined cost of goods sold (COGS) and cost of logistics.

On average, chemical manufacturers spend 10% of revenues on logistics.³ The majority of cost reduction initiatives focus on saving time and money in manufacturing and synchronizing supply and demand. As these initiatives are completed, there are diminishing returns to focusing only on production.

Not surprisingly, manufacturers have more data on the operation of the plants they control or contract with than on the feedstock supply or finished goods that are in-transit inventory. Because many chemical products ship in bulk and may require special or dangerous goods handling, distribution is often outsourced to specialty carriers or 3PLs.

These specialty carriers and 3PLs provide basic milestone data of shipments they carry, but not real-time updates or details that allow trend analysis to show where cost savings opportunities may be. To be responsive to customer expectations of shorter lead times, manufacturers may increase logistics costs with unnecessary air freight, over-ordering or overstocking. Precise data on real delivery performance can reveal ways to maintain or improve customer satisfaction while lowering the cost to serve.

Analytics based on actual data allow chemical shippers to fine-tune both supply and finished goods inventory, while still providing competitive lead times to customers and distributors. This data-driven information allows companies to get to the lowest cost to serve.

Leveraging Supply Chain Data to Reduce Risk



With real-time visibility on in-transit inventory, chemical shippers gain agility to respond to feedstock shortages or regional transport disruptions ahead of the competition.

Immediate benefits include responding when plans go awry to prevent delays and customer dissatisfaction. The biggest benefit, however, is stopping the downstream impacts that late delivery of a critical ingredient or a major customer order may cause.

Analytics on logistics performance is an untapped innovation zone that leading chemical manufacturers are beginning to prioritize. Armed with data on the on-time performance of every shipment, for every lane, for every customer, patterns will emerge.

Findings may include:

- Where do short lead-times require air shipments and where are air shipments of no benefit?
- Where is damage or theft most likely to occur?
- Would rerouting lower damage or theft sufficiently to justify lower insurance costs?
- What is the median ETA for a route and how should that affect buffer stock?
- Is your primary carrier the best OTIF performer?

These insights and other information that is buried in in-transit data can drive improvements to lower logistics costs and increase customer satisfaction.

If your firm is looking for better supply chain performance end to end, investigating in-transit performance offers a new look at data that can enhance other efficiency initiatives, add agility and lower the cost to serve.

Real-Time Shipment Visibility and Machine Learning ETA

Savi Visibility™ provides real-time information on the location and condition of in-transit shipments. While traditional supply chain software uses milestone-based EDI feeds only, Savi consumes and integrates billions of live streaming facts. Savi ingests sensor readings, Global Positioning System (GPS), telematics, ocean vessel location, private data sources and EDI milestones and applies machine learning to deliver precise ETAs that are accurate within minutes.

Savi Insight™ provides analytics to identify opportunities to improve delivery performance. Savi's comprehensive Software-as-a-Service (SaaS) analytics solution captures data from the Internet of Things (IoT) and other sources, correlates multiple variables (time, temperature, location, Electronic Logging Devices (ELD) rest requirements, etc.) and applies context to turn data into actionable information.

Savi's data-processing architecture is designed to handle enormous quantities of data. Savi Insight rapidly integrates data of any kind, from any source, at massive scale. A big data platform ingests streams of live data and uses real-time and historical data to predict precise ETAs, and answer other operational questions supply chain managers face each day.

WHO IS SAVI?

For over 30 years, Savi has supported large enterprises and the US Department of Defense in monitoring the location and ETA of in-transit shipments. Savi is a pioneer in the use of IoT sensor technology and data analytics to secure and improve modern supply chains.



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Endnotes

¹Tullo, Alexander H. "Chemical makers prime the feedstock pump." Chemical & Engineering News, 2018.

²Lord, Paul. "Benchmarks Suggest Delivery Performance and Inventory Realignment Are Top Chemical Supply Chain Opportunities." Gartner, 2019.

³Elwine, Anthony. "Key Logistic Trends in the Chemical Industry." Damco.