How do I Optimize an E2E Supply Chain to Drive Organic Growth?

Most supply chain planning processes today are disconnected and disjointed, existing in organizational and technology silos. Most consist of multiple systems and multiple databases. As one supply chain executive quipped, “Not only do we not integrate well with our supply chain partners, we don’t integrate well with ourselves.” In fact, a benchmarking study conducted by Supply Chain Digest found that 83% of planning executives described their planning environment as poorly to moderately integrated.

But the supply chain planning landscape is changing. Planning and execution processes are tightening. Instead of baked-in latency, forward-thinking companies are fueling revenue growth and cost reduction opportunities by leveraging analytics and moving closer to real-time execution with continuous re-planning, taking advantage of increased granular demand visibility down to the SKU-Location level. Connecting multiple demand streams with planning and execution is becoming a key to success in competitive markets.

Reducing Latency - “Sense and Respond”

Gartner believes the changing nature of supply chains—increasing globalization, unpredictability, volatility, risk, and complexity—is driving companies to invest more in what they call “response planning”. Gartner sees a strategic opportunity to leverage downstream consumption data as a pull signal to drive near-term upstream supply execution.

In this environment, Gartner calls for a "sense and respond" approach—reducing the latency between sensing demand and execution response. They say that to respond profitably, supply chains need to respond to demand changes by executing in a closer to real-time manner.

This new approach is needed, they say, to overcome shortcomings in forecasting demand, particularly at the daily/weekly and location granularity. For instance, one recent Gartner benchmarking survey showed the industry average SKU-level forecast error for one month out (lag 1) to be 22%. For new products, that error rose to 48%.

Gartner says firms that align upstream production and materials replenishment with downstream pull signals—such as POS, retail inventory, or warehouse movements— reduce forecast error, decrease inventory, have more predictable supply operations, and deliver equal or higher service. They say “data on downstream consumption and more responsive upstream supply, can better align inventory and supply execution to replenish what is needed and when, without excess inventory or waste.”

But many Supply Chain Planning Systems don't Properly Support Sense and Respond

Sense and respond requires connecting functional processes with an immediate flow of coherent information, across each individual supply chain process. This allows the entire process to be optimized in real time, providing a more accurate view of the business.

Isn't that what supply chain suites are supposed to do? Unfortunately most don't. Even the most "integrated" suites consist of independent modules built on separate logic and data models. They can talk to each other, but not without data translation. Because they need translation, they can't work in a seamless fashion, which increases latency and therefore an amplified bullwhip effect.

It's like language translation. Imagine using a computer program to translate text from English to Spanish, then to Italian, and finally back to English. While the text can be moved, maintaining the precise meaning requires extensive manual intervention, editing and latency; not just once, but at each step along the way. And this latency and lack of cohesion is a killer of supply chains.

Here's an example using a supply chain controlled by just three independent planning stages; Demand, Inventory and Replenishment. Assume a demand spike occurs. Demand Planning increases the forecast; but forecast error grows and hence Inventory and Replenishment Planning adds product to cover both higher forecasted demand and additional safety stock (Increased number of days coverage x increased forecast). The lack of coordinated control logic creates an overcorrection and bullwhip effect.

So a fragmented system induces the following supply chain planning process issues:

– **Data latency** - If the subsystems are designed separately, data redundancy between the system occurs and data propagation is delayed due to the need to align different data models

– **Incoherent data model/logic** - The modelling quality deteriorates and the final corrective action is incorrect

– **Manual overreaction** - Planners create additional overreaction. A bullwhip occurs even in a single–tier network. Across multi-tier networks, it grows bigger.

Moving to a "sense and respond" supply chain raises the bar. Systems need to become adaptive not just locally, but across the supply chain. If each module adapts in its own way, and with its own logic, it won't work. There needs to be a cohesive response across the supply chain.

A Single Model Fixes the Problem

The key to succeeding in this environment is connecting upstream demand sensing with downstream supply chain planning and execution in a single model that enables a shift in the way companies plan their end-to-end supply chain. Connecting functional processes in this way creates a flow of information that maximizes individual supply chain processes. Unlike a loosely integrated environment, increased visibility allows a cohesive single model to optimize the entire process.

In a "sense and respond" supply chain, all the components should be built on a single control logic and "DNA", including System of Record (SOR) functions (such as demand forecasting, fulfilment and replenishment) and System of Differentiation (SOD) functions (like demand sensing and multi-echelon inventory optimization). They should be perfectly coordinated and synchronized without latency, even communicating the concept of uncertainty across the supply chain, providing downstream demand visibility to upstream resources.

A predictive forecasting and dynamic replenishment model forms the foundation. It takes advantage of new ways to capture the demand signal and its impact on the supply chain. It leverages data that is readily available from a company's ERP system or systems (but may not be being used to its greatest benefit) and perhaps a demand signal repository (DSR) to foster end-to-end cross-functional decision-making.

The added visibility between functions allows each to make better trade-offs. And they are especially in a better position to measure, manage and control the "total cost to serve", a key metric of supply chain performance. The key features of a single model approach are:

1. A common modelling and data structure logic across all planning stages

2. An asynchronous workflow that minimizes data latency or fragmentation (the need to access and collect data from different databases) and assures all parts of the supply chain always have the freshest data

3. Coherent control logic that orchestrates the response to any perturbation, with an ability to change quickly and dynamically

4. Adaptive capabilities in all stages, requiring no user interaction

5. Low touch and responsive

We call supply chain planning that includes these important elements *Predictive Commerce*.

Improved Processes and Business Benefits

A Predictive Commerce approach accomplishes multiple goals:

– **Creates an "Outside-In" Approach** - Moving from a mind set of "what are we going to make today" to "what are we going to sell today" is often called an "Outside-In" approach to demand management. It takes advantage of demand streams, such as order lines, store-level POS data, web based transactions or customer warehouse data to provide visibility into future demand.

– **Fosters Collaborative Decision Making** - Unlike organizational silos, collaborative decision-making across functions creates a bi-directional flow of information and greater reliability of achieving desired business outcomes.

– **Reduces Latency in the Planning Process** - Reducing the amount of planning time and increasing the frequency of high quality decision-making helps improve customer satisfaction, asset utilization, profitability and cost.

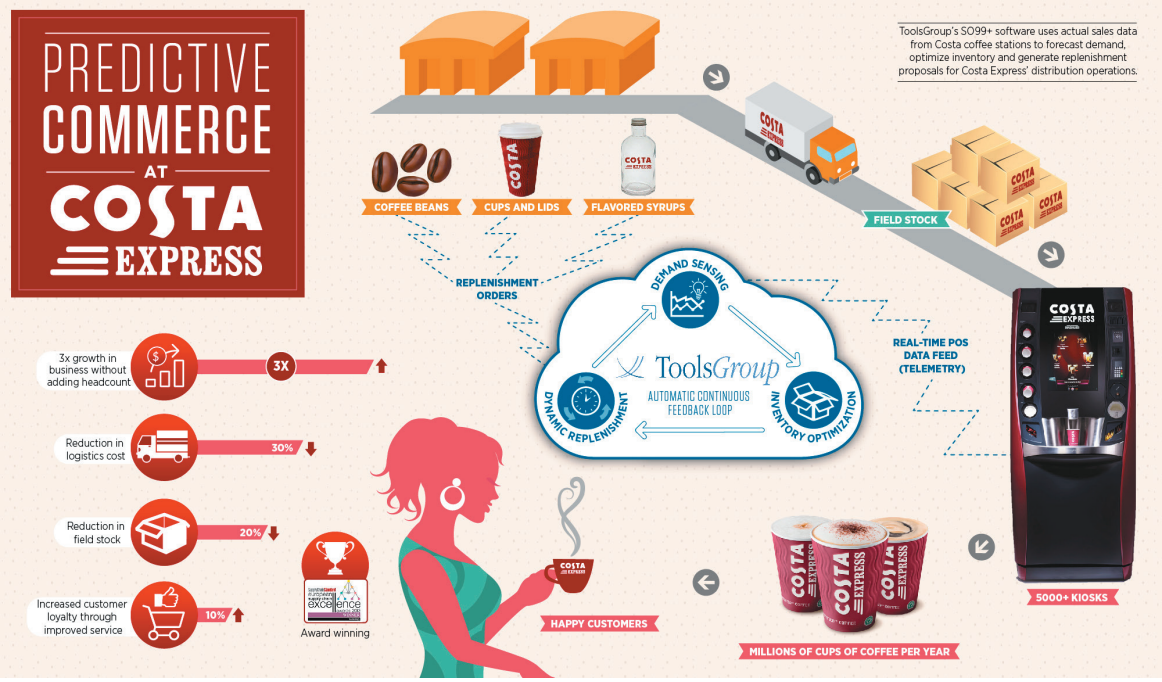
– **Converges Planning and Execution** - Synchronizing upstream and downstream functions (technologies and processes) allows planning and execution to converge. For example, providing an integrated demand signal and propagating it across the value chain gives visibility to logistics, manufacturing and the customer facing teams to deliver the best service at the most effective cost structure.

The sustainable business benefits that can be achieved by accomplishing these goals include significantly increased revenue and margin, as well as improved forecast accuracy, heightened inventory investment efficiency and savings in transportation spend.

Making a Successful Transition

There are many examples of companies that have successfully made this transition.

One such case is coffee retailer Costa which uses real-time downstream data to drive better inventory, replenishment, transportation and warehousing decisions. They use machine telemetry feeds to sense demand from more than 5000 locations to achieve demand-driven dynamic replenishment. The firm to cut field stock by 20 per cent, grew their business through increased customer loyalty, and scaled operations by 6X without adding headcount.



Another example is the National Health Service (NHS) which implemented a new supply chain planning system for managing the United Kingdom's blood supply. The NHS transitioned from a push approach to a demand-driven pull approach for a network that includes around the clock demand, blood components of all kinds, and hundreds of hospitals. The system starts with electronic signals that communicate real-time demand from hospitals, which is then translated into a pull signal back through distribution, manufacturing, collection and supply, in a comprehensive and scalable "vein-to vein" system. Because the system is highly automated, it has relieved hospitals of the time-consuming effort to order, manage and replenish blood supplies. A four-minute video showing the application can be found at:

http://www.toolsgroup.com/en/multimedia/customer-videos/item/1026-nhs-blood-supply-chain-case-study.html#content

For additional examples in your industry, please contact your regional ToolsGroup office.