

Fall 2005

A Message from the President

Events

Logic Tools Symposium

Chicago
September 22–23, 2005
enVista president, Jim Barnes, will take part in a panel discussion on September 22, and a supply chain presentation on September 23.

High Jump User Conference

Minneapolis
Oct 9–12, 2005
Jim Barnes will present two topics:
“Supply Chain Strategy: How to Assess, Design and Optimize your Supply Chain Network”
“The Benefits of Labor Management.”

Parcel Shipper Forum

Chicago
November 1–2, 2005
enVista’s Joe Heilig will present “Top Ten Tips for Evaluating LTL Carriers.”
enVista’s Mike Rader will present “How to Get the Most Out of Your WMS.”

NA 2006

Cleveland
March 27-30, 2006

DC Expo

Chicago
May 23-25, 2006

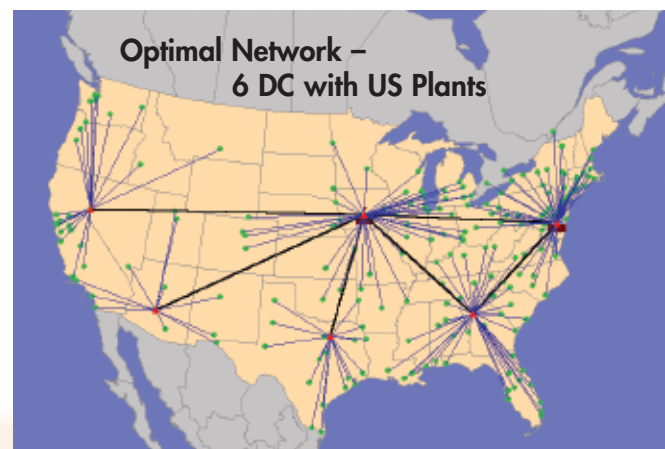
“How do you enable supply chain excellence?” Academics, consultants, executives and leading supply chain software organizations are constantly faced with answering this question. I have found that there is not just one answer, or a silver bullet. However, there is a process or methodology and a few rules-of-thumb that can help answer the question and get your organization closer to optimizing your supply chain from source to consumption.

The first step is to develop an accountable organization that is driven from the top down and the bottom up. I believe middle management is solely responsible for driving change within an organization and holding each functional area responsible for their actions.

The second step is to define clear and measurable goals and objectives. Often organizations measure the wrong thing or many times they confuse goals with direction. An organization’s goals should be based upon improving share holder equity, improving cash flow and improving customer service. Your C-level executives should be focused on external business drivers and providing your mid-level managers with clear and concise directions.

Now that you have established accountability (clear intentions, directions and commitments have been established), the third step is to develop a strategy that will meet the goals outlined in step two and, more importantly, develop a supply chain network that synchronizes demand (customers) with your suppliers and preferably their suppliers. I realize this is easier said than done. However, just remember to focus on a strategy that is flexible to react to changing customer demand with emphasis on reduced fixed and variable operating expenses and working capital (inventory).

The fourth step is to adopt the appropriate enabling technology to support your strategy. So often an organization can develop an optimal logistics network, but lack the enabling technology to support the network. For example, a retailer who should adopt a push/pull strategy based upon risk pooling of inventory, but cannot change their current pull distribution strategy because they do not have a retail merchandising planning solution.



The final step, and usually the most difficult to correct, is to break down organizational functional silos. Many times an organization does not reach “greatness” because organizational silos do not allow for open communication and creative thinking. Eliminate your silos by establishing cross functional metrics based upon step two. To learn more about accountable leadership I suggest Mark Samuel’s book, “The Accountable Revolution.”

Passionate about logistics,

Jim Barnes
President & CEO, enVista

Using Modeling to Improve Supply Chain Network Decisions

A proactive and continuous evaluation of your supply chain network is analogous to changing the oil in your automobile. It needs to be done proactively to ensure a long lasting return on your assets and to minimize potential failure. More importantly, to provide a piece of mind that, as business conditions and variables change, your supply chain network is running on all cylinders.

A well-designed supply chain network configuration can reduce annual operating costs by up to 15 percent and often decrease lead times as well. However, many companies have not performed a formal analysis to determine if they have the right number, locations, and capacities of DCs to support current operations and forecast growth. Instead, facility location is often based on judgment alone, such as a general desire to be near plants, suppliers or customers. Other DC locations are inherited from corporate mergers, broken down arbitrarily into separate buildings and locations by company division, or even built to be convenient to where the president of the company lives.

Supply chain network modeling is an objective, mathematics-based approach to determining alternative lower-cost supply chain network configurations. It is the process of representing your network data in aggregate cost, size, volume and location terms, defining parameters (e.g. potential DC locations) and constraints (e.g. limit the total number of DCs to three or less), then feeding both sets of inputs into a modeling tool that runs via a complex set of optimization algorithms. The model outputs the least cost locations, numbers, and sizes of DCs. It also assigns the least cost sourcing locations and product volumes to each manufacturing plant, supplier, DC, and customer location. Finally, it provides a cost estimate for the entire network, as well as detailed cost estimates for each of the DCs and transportation lanes in the model.

Why Model Your Network?

The main reason to model your supply chain network is to identify opportunities for long-term, multi-year operating cost savings. Unlike ad-hoc logistics cost reduction efforts such as annual bidding of transportation contracts, changing your network configuration impacts your overall logistics cost structure.

A more efficient network structure automatically reduces all logistics costs based on that structure. In other words, if your new DCs are now closer on average to suppliers and customers, you will automatically save on transportation costs independent of carrier contracts, simply because your merchandise will be traveling a shorter distance.

Another reason to model your network is to identify cost-effective opportunities to reduce lead time to suppliers or customers. Although it seems the goals of lower network costs and reduced

lead times might be mutually exclusive, there are many times when a reduction in the number of DCs can actually reduce lead times.

This occurs when new facility locations are closer to suppliers or customers. Although the model cannot quantify the dollar benefits of reducing lead time, many network optimization programs help quantify lead time reduction through statistics such as average weighted distance between DCs, plants, suppliers, and customers.

A final reason to model your network is to quickly evaluate logistics-related proposals that may affect network costs and service levels. This is done through the optimization software's "what-if" or "sensitivity" analysis capabilities. For example, the network modeling tool could be used to analyze the difference in transportation cost between sending parcel shipments to customers from one central DC (for inventory size economies) versus regional DCs (for zone skipping). Or the model could be used to evaluate the cost impact of consolidating reverse logistics operations at a single DC. This might be proposed if a DC has extra space for returns or is located closer to a key product supplier.

When to Model Your Network

If you have never modeled your company's supply chain network before, the right time to do it is now. Only then will you acquire some hard numbers on the differences in costs and service to operate your current network versus alternative networks. You should also model and optimize your network as soon as possible when there are one or more parts of it that clearly are not performing efficiently. A major DC that is operating at capacity for most or all of the year or customer complaints about long and inconsistent lead times are two key triggers to run a network model.

Other key times to model your network are prior to a facility lease expiration, during corporate restructuring, or to pursue new sales opportunities. An expiring lease on a DC or a manufacturing plant is a good time to check if you are operating in the right location because it is easier to move when you are not locked in with an early termination penalty. Corporate restructuring – which might involve your company in a merger, acquisition, or divestiture – generally requires a new network model be optimized to include your network combined with, or separated from, that of another company. And if your company provides 3PL services, you may want to show a potential client how your network of facilities can provide the fastest customer service at a reasonably low price.

Finally, it is a good idea to model and optimize your network every few years just to keep up with changes to plant and supplier locations, customer locations, and product volume. It is useful to ask

which of these changes are likely to be permanent and to increase in scale with time. A new network configuration can more efficiently address these changes. On the other hand, any sourcing or selling decisions which are more likely to be temporary do not necessarily require a new network model. If you change suppliers or customers often, one approach to reducing network uncertainty is to form an alliance with a 3PL with DCs located nationally. Then you could use network model results to form a policy of moving distribution locations within the 3PLs network every couple years or so.

Using Network Modeling: An Example

Recently, a \$1 billion footwear retailer with a single DC in the Mid-South and over 1,000 stores across the U.S. was considering several strategic initiatives to increase speed to market and reduce transportation costs. The retailer suspected it should have a West Coast DC because a majority of its footwear was manufactured in the Far East (other footwear was manufactured in Europe and arrived through an East Coast port). This meant that shipments bound for West Coast stores were forced to move from the port of entry all the way to the DC and back. However, it was unclear whether the West Coast DC should be company-run and focused on order fulfillment, run by a 3PL and focused on cross docking direct-to-stores, or some combination of the two.

Based on this retailer's logistics data, operational constraints, stated strategic goals, and the results of a separate cross docking cost reduction study, a network model was built and optimized to help answer the following questions:

- Is the extra cost to operate a West Coast DC justified by the transportation and inventory holding cost savings alone?
- What is the least expensive metropolitan area to operate the West Coast facility?
- Which set of stores should be served by the West Coast facility and which set of stores should be served by the existing DC?
- How many square feet would the West Coast facility require over the next five years?
- By how much would operations at a West Coast facility reduce space and labor needs at the existing DC over the next five years?
- How much more would it cost to hold the additional inventory required in a 2-DC network instead of a single DC network?
- Is it less expensive to perform order fulfillment or cross docking from the West Coast facility?
- Is it less expensive to cross dock from the West Coast facility direct-to-stores in the western U.S. only, or to all stores, bypassing the existing DC?

In the end, the retailer used model results and a subsequent ROI analysis to justify implementing a cross dock operation from a 3PL facility to West Coast stores. The cross dock may eventually operate from both coasts, involve all retail stores, and ship more than 50% of all inbound footwear.

Network Modeling Limitations

Network modeling is designed for long-term decisions on network structure. It is not appropriate for analyzing supply chain processes that operate over a relatively short time frame or that require a detailed examination of supply chain parts. Model inputs and results are typically aggregated over an average annual period or represent an overall average across all network DCs or transportation lanes. For example, DC size represents the average space needed throughout the year, while transportation modes (e.g. ocean, air, rail, TL, LTL, pool, parcel) are typically modeled as a single carrier with a single set of rates and discounts based on overall route averages. Thus, evaluation of where to place inventory on a month-to-month basis, how best to layout and operate a particular DC, or which specific transportation carriers to use are better left to other analysis methods.

A network modeling project can also be complicated for the layman to manage. The process of interviewing key stakeholders, collecting and validating data, inputting model parameters and constraints, running the model and recording results, analyzing transition costs, calculating ROI, and getting buyoff from the rest of the organization can take one and a half full-time analysts up to 14 to 16 weeks. If your network has multiple echelons of DCs (reserve warehouse and forwarding DC) or if you currently have two or more DCs, it is a good idea to hire an expert or use dedicated modeling staff to manage your network project. Only then will you have enough confidence in the results to proceed with actual implementation of a different, model-recommended network structure.

Final Thoughts

Supply chain network modeling is a powerful deterministic tool for evaluating the inter dependencies that exist in your supply chain, with the goal in mind of reducing cost and improving customer service. Model output includes not only the best number, locations, and sizes of DCs, but also the best assignment of suppliers and customers to DCs, the optimal amount of product to store at each DC, changes in average distance between DCs and other network locations, and comprehensive operating cost projections for all network DCs, other network facilities and transportation lanes. Modeling software also supports comprehensive sensitivity analysis to quickly analyze how different projections for future data inputs will affect optimal network configurations. For all these reasons, network modeling deserves an important place in your arsenal of supply chain analysis tools.

Shipping Tips

Carrier Selection and Management

Your carrier's service performance and transportation cost ripples down throughout your entire organization and affects both internal and external customers. If the raw materials or parts do not arrive on time, the production line could be shutdown. The finished product must be on the retail shelf for purchase or in the customer's plant or warehouse for distribution to complete the sale. A reasonable transportation cost (inbound and outbound) of finished product is imperative to compete in today's price aggressive marketplace. Is your company securing the best value for their transportation dollar?

By following the tips below proper carrier selection and management can be achieved.

1. Does the carrier have service centers in your customer or vendor areas and do they provide direct-line service to these points with competitive service standards? Obtain a copy of the carrier's load plan to determine their direct loaders.

If the carrier's local terminal is a breakbulk facility, then this terminal would realize freight handling and linehaul cost efficiencies which could be passed on in their pricing. Truckload carriers which have a driver base in your area will tend to provide better pricing per mile since they will avoid empty miles to point of pickup and may quote premium pricing on inbound movements to return their drivers back to their home terminal.

2. Review your carrier's on-time service performance against their service standards on a monthly basis to ensure compliance. Watch out for, or be attentive to repetitive service failures by lane or state.
3. Compare the carrier's base rate before discount on repetitive or common shipping lanes to determine the base-rate cost per cwt, if your pricing is not based on a single base-rate tariff. A carrier with a higher discount percentage may, in fact, be more costly. A single common base-rate allows for simplified pricing comparisons and guards against across the board general rate increases.
4. Obtain regular feedback from dock or shipping personnel on their interface with the carrier's driver. Is the driver on-time for delivery appointments and do they make the pickup prior to closing? Does the driver properly handle your freight and is the carrier's equipment in safe working order, such as no holes in the floor or roof, and clean?
5. Review the carrier's invoices internally or externally by utilizing an audit firm to ensure that all discounts are applied in compliance with your tariff. Look for waived accessorial charges which may have been improperly applied. As carriers reweigh and inspection programs intensify, verifying the validity of added charges due to weight and classification changes is crucial. In some cases, the shipment may have been tendered to the carrier as loose cartons and the carrier then loaded on pallets for ease of handling which would result in the added weight of the pallets.

New Clients

**Bridgestone/
Firestone**

Daydots

Edwards Brothers

Gabriel Brothers

General Parts, Inc.

Mailboxes, Etc.

Nature's Best

Vera Bradley

Wenger

Woot!