



THE LIVING MODEL

MOVING FORWARD WITH A BALANCED PLAN

OVERVIEW

A medical equipment provider operating a single distribution/fulfillment center in the United States wanted to fulfill customer orders more quickly by establishing a forward stocking locations (FSLs) close to end users. The initiative was expected to increase supply chain costs and the company needed to understand if certain offsetting cost decreases (inherent in the plan) would be enough to create an overall cost savings. By leveraging their Living Model environment, the customer was able to easily explore a spectrum of FSL costs compared to response time and optimize the right number of FSLs to implement.



OPPORTUNITY

The company needed to understand the minimal number of FSLs (and their locations) would enable them to reach order response time target: 95% within two days. They also needed to quantify the impact of multiple trade-offs, creating an iterative modeling need. The Living Model was ideally suited to integrate the data and rates, compare scenarios and explore tradeoffs. By dispersing inventory in FSLs across the country, operating costs would likely decrease at the company's single existing distribution center. However, each FSL would carry operating costs of their own which needed to be weighed against the DC's operational savings. Additionally, transportation costs would be different with distribution to the FSLs in the future scenario. Once those tradeoffs were evaluated, a final scenario could be modeled to understand whether costs could be further reduced by decreasing the number of FSLs if the company was willing to adjust their response time targets.

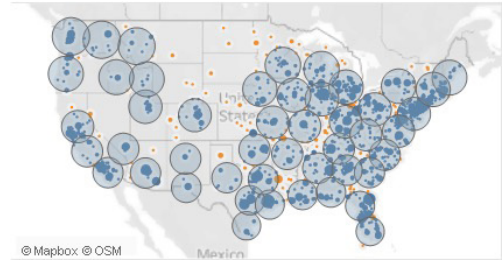
SOLUTION

The Living Model team established a baseline of the in-scope network, using the company's supply chain transaction data and rates to model the existing fulfillment network and costs. The visualization suite showed volumetric trends over time, current response times, categorized costs and a map tracing order flows from the single distribution center out to hundreds of customers around the United States.

The alternate scenarios were constructed by building a center-of-gravity model to determine the number of FSLs needed in order to meet response time targets of 95% and 100% of end customers. Costs were then calculated following a per-CBM, per-KG or per-mile standard to understand final delivery costs, operating costs of the FSL and DC, and replenishment costs for the inbound material.

Visualizing the alternate scenario to the baseline provided clear insights into the potential tradeoffs across various cost and transit time elements. As expected, costs increased exceptionally when adding the minimum quantity of FSLs (47) to reach response time targets for 95% of end customers. Once quantified, the customer realized the increase was larger than budgets would allow. customers.

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Rather than abandon the initiative to improve order response time, the customer collaborated with Living Model team to quantify the trade-off of operating fewer FSL's vs. customer response times, as well as modeling different Distribution Center designs such as a greenfield approach to a single DC, or a two-DC model with a constraint to use the existing DC. The company was able to confidently determine the optimal design based on the spectrum of network designs which were modeled, allowing them to align with budgetary constraints and satisfactorily met response time targets.

Importantly, reducing the number of FSLs was not the only option for reducing costs. The Living Model solution also allowed the customer to understand the impact of carrier selection, FSL operating overhead and consolidation alternatives. This iterative approach leveraged a primary benefit of digital twin technology: flexibility to adjust scenario parameters and understand how costs fluctuate.

CONCLUSION

A supply chain exploration tool like the Living Model allowed the company to compare tradeoffs that are important components in understanding and building iterative supply chain configurations. Classically, supply chain studies take weeks or months to return initial results, and the work to answer subsequent questions often approximates the work required to answer the first questions. With the Living Model digital twin environment, strategic questions can be answered quickly with near-real-time data, allowing analysis to keep pace with the company's strategic goals.

