



Consultants in Material Handling Logistics

Operations Design for Warehousing, Manufacturing and Distribution

Consumer Electronics Company (Network Model)

Description:

Due to a merger between our client and a competitor consumer electronics company, we were tasked with determining the future distribution network for the combined entities. Our client was in the midst of constructing a new warehouse in the Southwest, while the merging company had two distribution centers, one in the Midwest, the other on the East Coast. Both facilities were relatively new and could handle increases in inventory and volume. The new Southwest warehouse was also being built to handle significant expansion, with the possibility of a merger contingent on the construction. Due to the time sensitivity of new product releases to company-owned stores, a majority of orders were sent via UPS or FedEx overnight or 2-day shipments. Each company had negotiated discounts rates with their respective shipping carrier.

Project Scope:

Gross & Associates was tasked to develop a network model based analysis to determine the least cost distribution network that could service each company's store sales requirements, including the location of each facility, the size requirements, and the suitability and cost savings in using one or more of the existing warehouse locations.

Approach and Methodology:

We collected data on shipments to company stores and Internet-based shipments to customers over the previous year, for both companies in the merger. The data was summarized and combined into American and Canadian zip codes and imported into our network modeling software, MicroAnalytics' OptiSite 2.0. We also collected data on shipping rates and actual freight costs to these zip codes, along with the discounts provided to each company by their primary delivery carrier. Inbound costs and shipment data from a variety of vendor suppliers, excluding those making direct shipments to stores, were also gathered.

Due to the condition and size of the existing warehouses, we also included an extensive study of their capacities, both in storage and throughput, to determine the suitability of their infrastructures to handle the combined companies' volumes, under both present and future conditions. Costs were collected for operating each facility and converted to common measurements of unit costs, due to the lack of consistency in data collection across the companies.

We ran all this data through our network modeling software – the demands by weight, the inbound and outbound costs, and the warehouse locations, operating costs, and capacities. Our initial models validated each of the two separate

companies' models by approximating within 2% of their actual yearly costs and demands for inbound, outbound, and warehousing, as well as their inventory levels. When we were certain that the model was accurately reflecting their existing conditions, we combined the models and began running scenarios relevant to finding least-cost/best service combinations for the distribution network.

Different scenarios included overall least-cost networks, with 1, 2, 3 or more distribution center networks at model-selected locations; best-service networks under the same conditions; and a variety of models that used existing warehouse locations under facility capacity and throughput restraints.

Results:

The difference in overall costs and service levels between the scenarios featuring all new facilities and those using existing warehouses was small enough to eliminate the new facility options, due to the high costs of opening a new warehouse, building its infrastructure, and relocating existing production. The model results were therefore used to compare the expected costs and service levels of servicing the network using a combination of the existing facilities, with the capacity constraints in place. Gross & Associates made a recommendation for the final distribution network decision, based on the model, our study of the existing facilities, future growth expectations, and our considerable experience with network modeling. The client accepted the results of our study and largely based their decision on the merged company network on our analysis. The combined companies are now operating out of the warehouse location(s) we recommended.