Optimizing Variable Transportation Flows

Overview & Background

Weekends Only exists to provide quality and affordable furniture for every home and budget. Since opening its first store in 1997 Weekends Only has grown to be one of Furniture Today’s Top 100 U.S. Furniture Stores. With 50,000 square foot showrooms, the organization offers customers the live experience of browsing, feeling and testing combinations of furniture sets with certain functions of interest: dining, living, bedroom, recreation, etc. Weekends Only also entered the online shopping market in 2013 with its e-commerce website functioning 24/7.

As its name suggests, the Weekends Only showrooms are open only during the weekend: Friday, Saturday and Sunday. The organization spends the rest of the week sourcing the best deals nationwide for their customers. This unique business model drives down operational costs, keeping the price tag low for customers. Weekends Only also facilitates a new hybrid click-and-mortar model, taking advantage of both the convenience and accessibility of e-commerce and the personal shopping experience of a brick-and-mortar store.

Challenge

A top priority among Weekends Only’s operational challenges, is to continuously optimize the distribution of procured furniture from vendors all over the world to its warehouses and retail stores in the US. Historically inbound ocean freight from Asia had been shipped via the Port of Los Angeles in California. However, recent developments have made the Port of New Orleans and the Mississippi River a potential attractive option. The
Logistics Team at Weekends Only would like to explore the cost-benefit of multi-modal transportation via combination of ocean, barge and truck through the Port of New Orleans and Mississippi River. Specific interests include determining under which conditions; i.e. cost factors, lead time, capacity, etc. should Weekends Only opt for this alternative route or a combination of routes.

Solution

In collaboration with the University of Missouri-St. Louis, Weekends Only chose the anyLogistix platform to take on their supply chain challenges. Their choice was quickly justified as anyLogistix was the only software package on the market that could comprehensive model their requirements by combining both optimization and simulation methodologies in one platform.

Within the anyLogistix solution the team was able to model and experiment with two core scenarios; current state, and potential future state.

1) **Current State:** Container shipments are orchestrated from Shanghai, China to the Port of Los Angeles in the United States. Once arrived in LA, the containers are shipped via truck or rail to the final warehouse destination located in St. Louis, MO.

![Figure 1. Current international logistics operations at Weekends Only.](image-url)
2) **Potential Future State:** Alternatively, Weekends Only could employ an additional route via the Port of New Orleans, then ship the containers on barge via the Mississippi river up to St. Louis, MO.

![Diagram](image)

**Figure 2. Alternative shipping route/mode from Shanghai to St. Louis.**

Considering various constraints Weekends Only sought to determine:

1) What is the best way to ship from Shanghai to St. Louis in terms of route and transportation mode?

2) Under what conditions of cost, capacity, transit time and frequency of ocean freight from Shanghai to New Orleans, would Weekends Only opt to choose the Shanghai -> New Orleans -> St. Louis route?

3) How will the shipping plan be impacted by various uncertainties of transit times, shipping loads and capacities?

**Outcome**

Leveraging the anyLogistix Network Optimization & Simulation capabilities Weekends Only was able to determine the Port of New Orleans was a very attractive option for moving their inbound freight. Annual cost savings identified by the project were roughly $730,000 USD or 27% of their total Shanghai to USA inbound freight spend. To mitigate risk and ensure the route change decision was best for the business a series of simulation experiments within anyLogistix were performed. Through simulation Weekends Only was able to holistically demonstrate the slight increases in lead-time and required landed inventory were more than offset by the transportation savings and trip frequency reduction, leading to an across the board project success.