Automotive Manufacturer Increases Profits by 28% with Greenfield Analysis and Network Optimization

Challenge
A major automotive manufacturer wanted to improve the structure of its Australian service parts distribution network in order to align it with the brand’s global strategy and turn it into a competitive advantage. Apart from the lack of control over distributor to dealer pricing and order fulfillment lead time to dealers, the company also desired greater visibility of the entire dealer distributor to dealer supply chain in the Australian region.

Specifically, the company wanted to move from the current state:

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OEM → Distributors/Wholesalers → Dealers
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...to the future state of an end-to-end OEM-managed part distribution process:

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OEM → Managed centralized storage → Regional DCs → Dealers
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With the elimination of the dealer ‘middle-man’ from the supply chain and improved end-to-end distribution of service parts, the company was able to add $23 million to its bottom line.

This move would likely add logistics costs due to the addition of new self-managed facilities but could bring in an extra 15 percent of product price to the OEM while cutting out the dealers as the “middle-man”. The company enlisted the help of LLamasoft to identify the optimal regional DC size and locations and how to best fulfill orders from these locations.
Solution

Prior to building the baseline distribution network model, the high number of SKUs needed to be grouped to a more manageable quantity. Starting with a total of 130,000 parts SKUs, the team determined the best differentiating factors and aggregated the number of products down to 1,024 by considering product velocity, DC binning sizes and category.

Next, greenfield analysis was used to identify common Australian logistics locations and calculate costs of potential new DC locations, taking into account demand and customer service times. Regional facility costs per square meter for alternate new DC locations were considered, along with the company's current fixed operating costs.

Sizing for the new facilities identified through greenfield analysis was considered in the network optimization model. Regression analysis was performed on existing facilities by comparing the relationship between facility size and throughput. This analysis was used to develop a fixed operating cost step function to let the model choose the appropriate size for the facility. The model showed diminishing throughput returns with increased facility size and identified the minimum facility size needed to meet demand and service constraints.

Results

The LLamasoft model identified the optimal locations and facility sizes for multiple regionally managed DCs in Australia. Due to the elimination of the dealer ‘middle-man’ from the supply chain and improved end-to-end distribution of service parts, the company was able to add $23 million to its bottom line (a 28 percent increase in current profits) while improving overall visibility to parts distribution while maintaining best in class service levels.