Supply Chain Shipping Analysis

Overview
The Vitamin Shoppe will ship 46 million units of product in 2010 to 473 stores from their distribution center in North Bergen, New Jersey. This project is focused on minimizing shipping costs to each of the company’s seven regional transportation routes by identifying key areas for savings in transportation rates through the use of an ideal container: a plastic tote or corrugate box. These costs make up the largest expense of the supply chain operation.

Objectives
- A store-by-store analysis to determine the cost or benefit of two types of shipping containers: plastic totes or corrugate boxes
- Analysis should consider shipping costs, container weights, reverse logistics, recycling and labor costs
- Determine a decision point for each route in terms of the ideal shipping container
- Outline necessary actions for the company to take based on analysis and recommendations
- Provide an easily modifiable model of the data in order to analyze future shipping conditions

Approach
- Visited the Vitamin Shoppe headquarters and observed the company’s shipping process
- Received pertinent data to begin analysis of the supply chain operation
- After discussing our initial approach with the Vitamin Shoppe team in a weekly conference call, they clarified that each route will only use one shipping method and not a combination of the two
- It was decided that an in-depth analysis was an appropriate approach; Microsoft© Excel was the chosen software to create a summary of the data analysis and aid in the calculation of shipping costs
- A single spreadsheet gathered all the contributing costs, given the specific shipping rates and calculated an average weekly shipping cost for each store, which makes up the weekly cost for each route, for each of the two shipping methods
- The total cost for plastic totes was compared to the total cost for corrugate boxes and the least costly alternative was determined
- Verification was essential in ensuring the data was gathered from correct sources and the formulas in the software were calculating measures correctly
- A break-even analysis was then performed to determine the average total weekly shipping weight at which the alternative shipping method would become the least costly option.

Outcomes
- Two routes would benefit from shipping in corrugate boxes and the remaining four routes should continue shipping in plastic totes for the lowest cost option
- The sponsor will save an average of $12,808 per week (approximately $666,016 annually) as a result of the supply chain analysis
- The Vitamin Shoppe can reduce the number of plastic totes in inventory by approximately 50% due to two routes changing the shipping method from plastic totes to corrugate boxes