WonderMarket Client Report

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MATH3202 Assignment 1
Due 29/03/2019 12:00 pm

Abstract

In this report, we propose a solution to optimise your supply chain logistics, to minimise costs while ensuring all demands are met.

Solution

We have considered your requirements of weekly demand, DC capacity, northside capacity and surge demands. We propose the following assignment of stores to distribution centres.

Store	DC0	DC1	DC2
S0	0.00%	0.00%	100.00%
S1	100.00%	0.00%	0.00%
S2	100.00%	0.00%	0.00%
S3	0.00%	100.00%	0.00%
S4	58.82%	0.00%	41.18%
S5	0.00%	83.86%	16.14%
S6	0.00%	100.00%	0.00%
S7	0.00%	64.77%	35.23%
S8	0.00%	64.77%	35.23%
S9	100.00%	0.00%	0.00%

We have verified that these assignments can scale up to the surge scenarios provided without exceeding and of your capacity limits.

Costs

Under normal demand, this would cost you $199661.44 per week. This was the cost that was minimised. The costs for each surge scenario are outlined below.

Scenario	Cost
0	$227409.44
1	$246009.15
2	$200468.44
3	$251438.63
4	$305536.20

Impact of Constraints

- Only considering each store's demand without any capacity constraints (communication 1) resulted in a cost of $150212.
- With DC capacity (communication 2) was considered, the cost was $174952.
- With the northside capacity limit (communication 3) as well, the cost was $179882.
- Catering to the surge scenarios results in the cost discussed above.

Further Improvements

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