Water for Everyone!

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Sponsor: Niagara Bottling

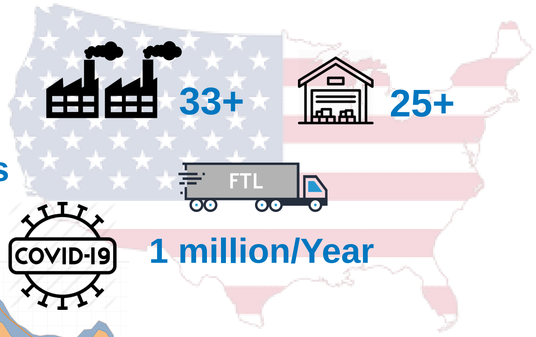
MIT GLOBAL SCALE NETWORK

May 2021 Poster Session

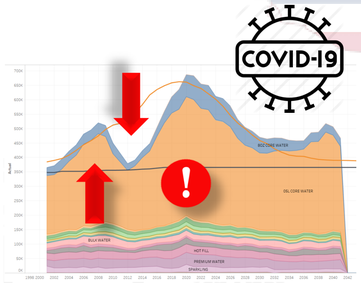
Motivation / Background



~1300 SKUs



1 million/Year



Demand change



Production Strategy?

Key Questions

- Which production strategies are most effective during a demand change that company faces?
- What is the impact of immediate changes of production volume and frequency to Niagara's supply chain?

Relevant Literature

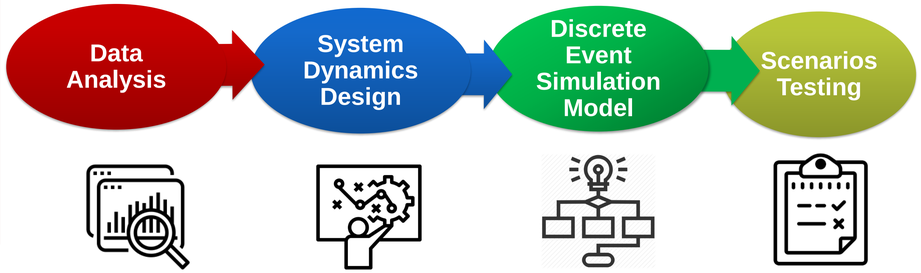
- Tako, A. A., & Robinson, S. (2012). The application of discrete event simulation and system dynamics in the logistics and supply chain context. Decision Support Systems, 52, 802–815. https://doi.org/10.1016/j.dss.2011.11.015
- Brailsford, S., & Hilton, N. (2001). A Comparison of Discrete Event Simulation and System Dynamics for Modelling Healthcare Systems. 17.



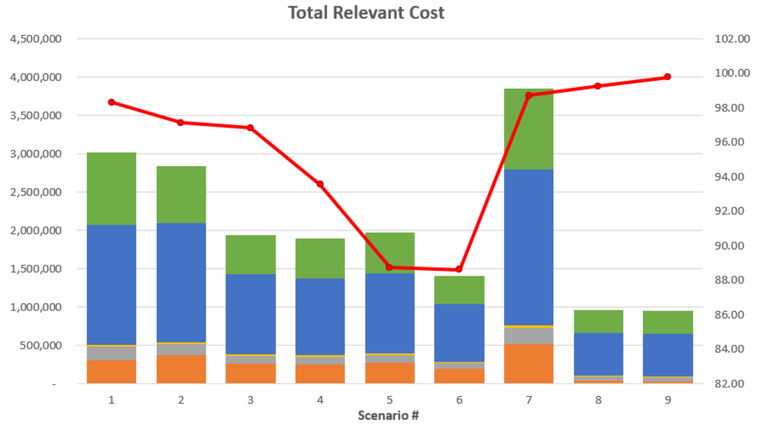
The Problem

- Seasonal demand generate predictable affects to production frequency and volume. However, disruptions like pandemic have unpredictable demand that affect production and supply differently.
- The demand surge due the COVID-19 pandemic has caused a disruption in production strategy and service level set by Niagara.

Methodology



Results



Scenarios	MTO	MTS
1	0%	100%
2	20%	80%
3	30%	70%
4	70%	30%

Scenarios	MTO	MTS
5	80%	20%
6	100%	0%
7	100%	100%

Scenarios	Description
8	85-10-5 (%) Niagara segmentation
9	70-20-10 (%) segmentation

Contributions

- Quantifying the impact of various production strategies (make-to-order, make-to-stock) to cost (changeover, storage, transportation) and service level
- Quantifying inventory policy associated with each production strategy with recommended SKU segmentation

Rui Yin Tan



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