Designing Inventory Management Strategy for Fill Rate of 98%

Student: Deviana Sia, SCM 2022
Student: Ashish P Chhabria, SCM 2022
Advisor: Dr. Josue Velázquez Martinez
Co-Advisor: Dr. Ilya Jackson
Sponsor: CH Robinson

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Motivation / Background

C.H. ROBINSON

As one of the world's largest logistics platforms, C.H. Robinson solves logistics problems for companies across the globe and across industries, from the simple to the most complex.

Motivation: Inventory management is a crucial concept in the world's increasingly complex and global supply chains. **Poor inventory management** leads to **suboptimal value creation** and **unnecessary waste**.

1.5%
% of world GDP tied to inventory

$634B
Annual value of lost sales due to out-of-stock fines

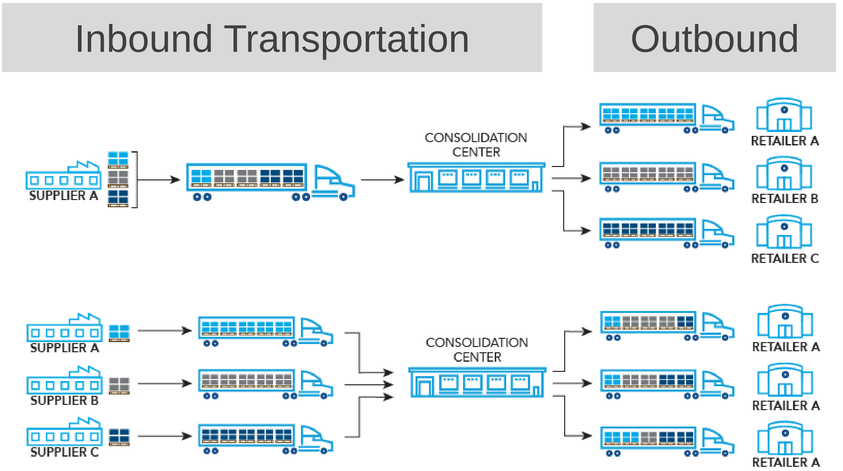
$472B
Value of excessive stocks / year

Key Question

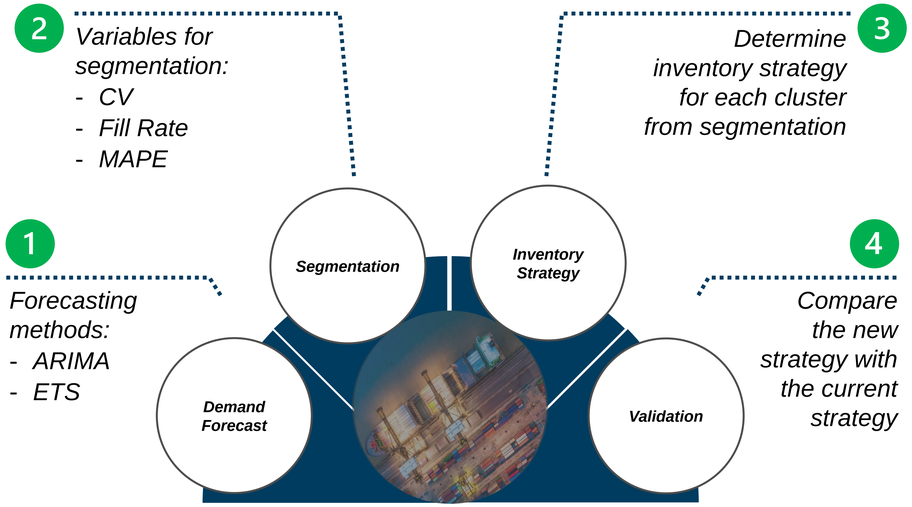
What is the **optimal inventory strategy** to **achieve 98% fill rate** and **prevent out of stock**?

Relevant Literature

1. Silver, E. A., Pyke, D. F., & Thomas, D. J. (2016). Inventory and Production Management in Supply Chains. Taylor & Francis Group.
2. Hyndman, R. J., & Athanasopoulos, G. (n.d.). Forecasting: Principles and Practice. 505.
3. Garbade, M. J. (2018, September 12). Understanding K-means Clustering in Machine Learning | by Dr. Michael J. Garbade | Towards Data Science.

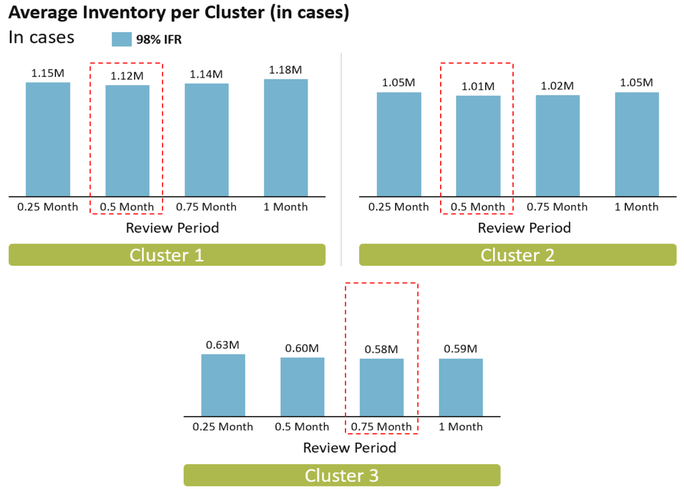


Methodology



Insights and Results

Using our strategy, we identified the ideal average inventory level to satisfy a 98% Item Fill Rate (IFR) for a sample item set.



Expected Contribution

- Better fill rate
- Reduce shortage fines
- Economical and efficient
- Better relationship with retailers
- Increase in-stock and sales
- Satisfied customers


Ashish P Chhabria


Deviana Sia