Less Is More: Simplifying Inventory Tactics

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Motivation / Background

Operational Hurdles at Sponsoring Company

- Supplier-driven shortages
- Highly variable lead times

Procurement

- High forecast variance among SKU assortment
- Different product configurations cause increased

Demand Planning

- Several product configurations lead to high machine changeover times
- Forecast error bullwhips through production schedule causing labor inefficiencies

Production

- Increased storage costs due to forward buys to meet demand uncertainty
- Increased transfer costs to meet inventory shortages at regional warehouses

Distribution

>MEASURE overall impact of modularization and postponement on Sponsoring Company's Key Performance Indicators (KPIs)

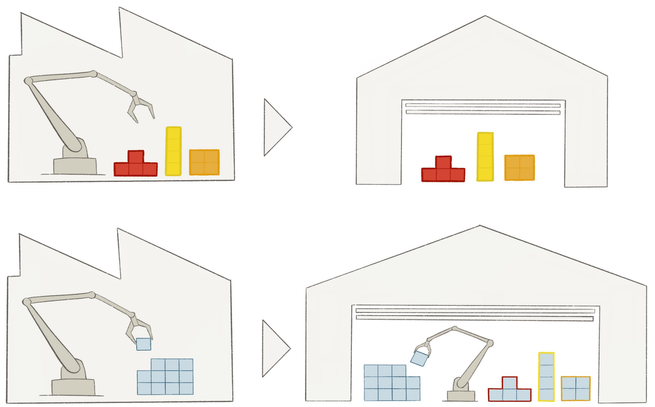
>CAPITALIZE on lack of external interference in a heavily controlled environment

Key Question / Hypothesis

What is the impact of inventory management techniques when implemented in a small business environment?

Relevant Literature

- Pagh, J. D., & Cooper, M. C. (1998). Supply Chain Postponement and Speculation Strategies: How to Choose the Right Strategy. Journal of Business Logistics Vol. 19, No. 2, 1998. Retrieved November 5, 2021, from https://togarsim.tripod.com/post/pagh.pdf.
- Perez-Franco, R., Phadnis, S., Caplice, C., & Sheffi, Y. (2016, September 17). *Rethinking supply chain strategy as a conceptual system.* International Journal of Production Economics. Retrieved November 5, 2021, from https://www.sciencedirect.com/science/article/abs/pii/S0925527316302444.
- Van Hoek, R. I., & Commander, H. R. (1998). *Reconfiguring Logistics Systems Through Postponement Strategies.* Journal of Business Logistics Vol. 19, No. 1, 1998. Retrieved November 5, 2021, from https://togarsim.tripod.com/post/vanhoek_com.pdf.



The Problem

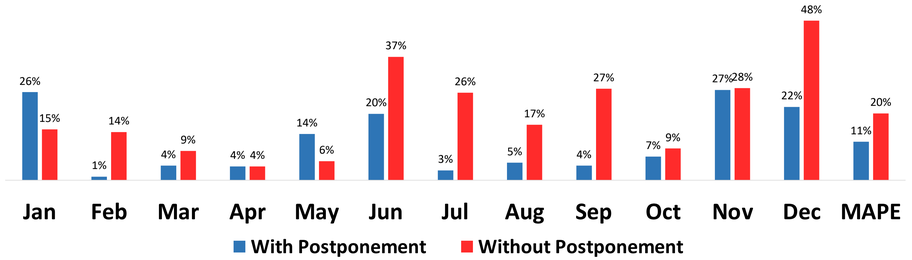
The Sponsoring Company implemented a postponement and modularization inventory management strategy in September 2021 but are unable to quantify the impact of the new strategy on its supply chain.

Methodology

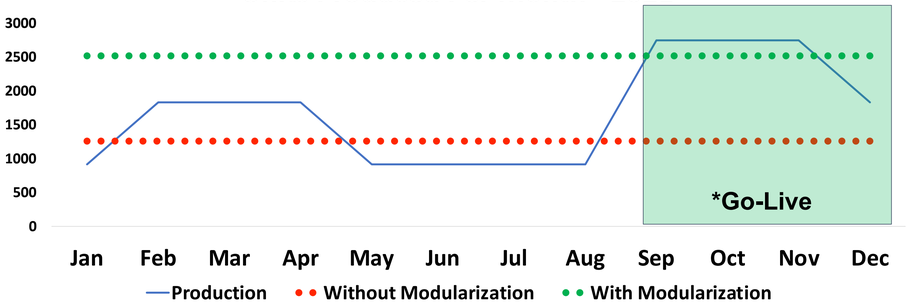
- **Process and Mapping**
- **Understand Current Supply Chain Strategy**
- **Statistical Analysis**
- **Monte Carlo Simulation Analysis**
- **Calculate KPIs Before and After Implementation**

Results

Monthly Forecast Absolute Percent Error - 2021



Units Produced Per Month - 2021



Contribution

>Inventory Management techniques can be successfully implemented in a small-business setting and positively impact:

- **Profitability (+14.5%)**
- **Production Efficiency (+50%)**
- **Forecast Variance (42.4%)**
- **Total Spend (2.41%)**
- **Warehouse Capacity (52.6%)**

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