

Optimizing MTC Supply Chain

Supply Chain Management Strategy

One Direction ROWing Company

March 2023

Presentation Checkpoints

- 1 About Our Team
- 2 Overview of MTC
- 3 Areas of Improvement
- 4 Possible Risks and Contingencies
- 5 Closing Remarks

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About Our Team

- Michael Huang, the Consulting Director of Supply Chain Operations
- John Doe, the Assistant Director of Supply Chain Sustainability
- Mary Anne, the Net Zero Supplier Engagement Manager
- Sidney Park, the Senior Engagement Manager of Sustainability Sourcing

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Overview of MTC

- **Company Name:** Medical Technologies Corporation (MTC)
- **Headquarter Location:** Collegeville, Pennsylvania
- **Size:** The sector located throughout the country consists mostly small-sized and medium-sized device manufacturers, where more than 80% of them have less than 50 employees, concentrating on high-tech-heavy regions.
- **Primary Issue:** To determine the savings enough to cover 2.3% Excise Tax on revenue that is compensated from 10% reduction of profits.

Financial Situations

- **Industries:** Medical devices are essential in pharmaceutical and medical industries, which prevent revenue swings. However, they are very expensive and can cost the company huge economic downturns, which complicate the sourcing, the purchasing power and the pricing negotiations.
- **Distributors:** The wholesaling industry has shown great feats to overcome challenges, including the recession in 2009 and unemployment. Yet, they came short in 2015, where 2.3% excise tax was imposed on goods, creating disastrous effects on the overall operation and increasing rate of unemployment.
- **Hospital Systems:** Even though focusing on patient and hospital outcomes is the company objective, that inadvertently drives hospital providers to do more with less. Given this premise and the financial uncertainty those providers face to determine the coverage, that shifts their focus toward the least competitive side, hinting possible dangers to MTC financially and economically.

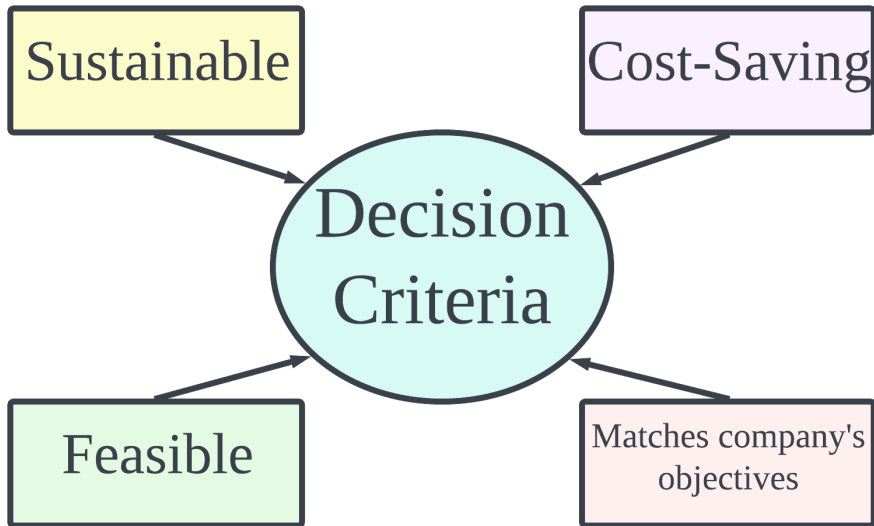
Supply Chain Issues

Few factors to address, concerning the supply chain:

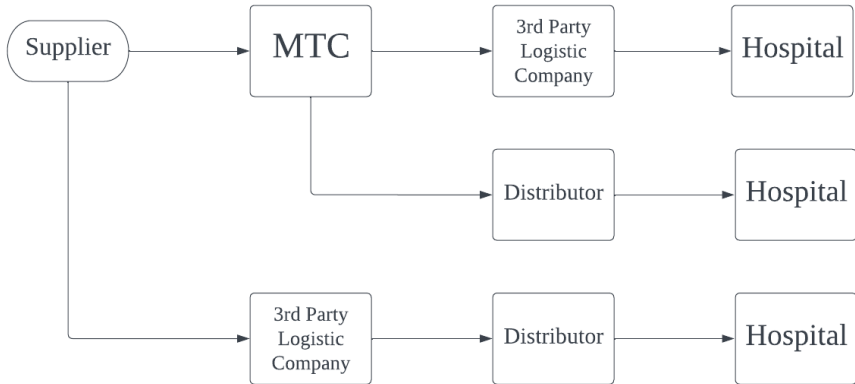
- **Inventory Management:** The supply chain trend varies dramatically. Excess replenishment and large amount of inventory can increase mean-variance and supply costs. While having a trunk stock can be thought of as a safety stock to ensure well-stocked inventory, that can pose a significantly negative impact on the revenue. An improper or unsafe movement made to inventory management can have a negative impact on the revenue and the profit.
- **Sterilization units:** Sterilization units are expensive and can impact MTC financially. In addition, they introduce additional lead time (traveling time) and multiple touch points, which lowers the supply chain efficiency. An improper supply chain management approach can lead to unemployment or layoffs.
- **Relationships & Trust:** By only relying on customers (hospitals) and not on supply chain, this makes inventory control difficult or nearly impossible to manage, which can jeopardize the industry reputation.

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Rough Transportation Model



Improvement Strategies

- **Versatility:** By expanding possible paths and adding additional logistic warehouses, we minimize the total transit time and total shipment distance. In addition, in case one path is unavailable, the shipment process continues.
- **Product Cycle:** Products will be rerouted to supplier after hospital uses. The cycle repeats, starting from supplier to warehouses, then to sterilization or non-sterilization (whenever necessary and feasible) and then to hospital. This improves the product process control.
- **Business:** Negotiate prices with trusted & limited distributors and sales teams to secure a financially safe deal. Lowering expenses and intangibles can also minimize net earnings.
- **Analysis:** According to 2013-2014 trend, the demand behavior is seasonal. Assuming this seasonality holds, the inventory analysis shows that 0.1-exponential-smoothing strategy exhibits the best calculated results.

Inventory Analysis

Naive Forecast MSE	334449040
Naive Forecast CSE (Produced)	202297579
Cumulative Mean MSE	171283589
Cumulative Mean CSE	21896974
Moving Average (2 Mo) MSE	229554313
Moving Average (2 Mo) CSE (Produced)	57547893
Moving Average (3 Mo) MSE	223385768
Moving Average (3 Mo) CSE (Produced)	45335573
Moving Average (5 Mo) MSE	199159682
Moving Average (5 Mo) CSE (Produced)	30898351
Exponential ($\alpha = 0.10$) MSE	170856829
Exponential ($\alpha = 0.10$) CSE (Produced)	25032237
Exponential ($\alpha = 0.25$) MSE	198456441
Exponential ($\alpha = 0.25$) CSE (Produced)	31324481
Exponential ($\alpha = 0.50$) MSE	263055850
Exponential ($\alpha = 0.50$) CSE (Produced)	55483302
Exponential ($\alpha = 0.75$) MSE	361442914
Exponential ($\alpha = 0.75$) CSE (Produced)	104240054
Minimum Forecast MSE	170856829
Corresponding Forecast for MSE	$\alpha = 0.10$
Minimum CSE with respect to Produced	21896974
Corresponding Forecast for CSE	Cumulative

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Possible Risks and Contingencies

- **Macroeconomic Uncertainties:** Despite of the calculated analysis, it is possible that the future results can change drastically. In the case of financial downturns and fluctuations, incomes will be greatly affected by inventory overturns or deficits, which in turn affects the calculation results with the planned forecasting method.
- **Operations:** Outsourcing does well to keep the supply chain going. On the other hand, the disadvantage is that it also invites silo effects, lack of operations consistency and lack of financial support (due to contracts and its impacts on profitability). Possible instances can include distributors not aggressively selling products.

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Closing Remarks

Few thoughts from the presentation include:

- **Technology:** Implementing additional features, like mobile applications, can provide hospitals greater flexibility and ease of reaching out to distributors.
- **Supply Chain:** For next upcoming years, focus on optimizing supply chain process to ensure positive services. While developing sterilization units into a cohesive alliance, minimize the number of locations needed to process shipments, which reduces total costs. In addition, evaluate models and implement when necessary.
- **Finance:** For next upcoming years, follow up with sales teams to check if the savings calculated meet the threshold.