

Course Project Part 2

Executive Summary

Dashboards & Storyboards

The supply chain risk dashboard offers useful information about supplier risk, inventory trends, and sourcing strategies. However, it has several gaps that limit its value as a full risk management tool. It highlights key issues—like the company's heavy reliance on a few main suppliers, especially RealGlass from China—but it lacks deeper context and clear groupings of suppliers by importance, which makes decision-making harder.

The company depends heavily on RealGlass, which brings in nearly three times more revenue than any other supplier, despite having the lowest credit rating. Other major suppliers like Boavidro from Brazil and GutesGlas from Germany also add to this concentration of risk. After the top five suppliers, revenue drops off sharply, showing that the supply base is too narrow and vulnerable to disruptions. Even though the company works with suppliers in eight countries, it still relies heavily on China. The dashboard also flags six suppliers as "Single Source," but doesn't explain how much business they handle or why alternatives aren't used.

The demand data shows clear seasonal trends, with sales reaching their highest in the last quarter and then dropping by around 70%. This means the company needs to plan inventory and production more carefully. However, the dashboard only shows overall demand and doesn't include important details like product-level data, lead times, reorder points, or service level targets. It uses the Coefficient of Variation (COV) to track changes in demand, but doesn't explain what levels are normal or how to respond to them in practice. The Coefficient of Variation (COV) is a simple way to measure how unstable or unpredictable something is, usually demand or sales.

Sudden and unpredictable demand spikes when the Coefficient of Variation (COV) is around 0.2, 0.7, and 0.9 make it harder to predict future sales, especially for best-selling products. The COV measures how much demand changes over time, and when it's too high or inconsistent, it becomes difficult to plan accurately. At the same time, there are supplier issues, like poor data security and labor concerns, which increase risk. While some smaller suppliers are more reliable, they don't bring in enough business to offset the risks from larger, higher-risk vendors.

Insights and Conclusions

The demand projections clearly indicate a consistent upward trajectory across all three products—ampoules, syringes, and vials—spanning from Q3 2020 through Q2 2021. Ampoules exhibit the sharpest increase in demand, nearly tripling by Q2 2021 compared to their initial figures in Q3 2020. Syringes and vials also reflect strong growth, though at slightly lower rates. This rising demand trend suggests the urgent need to optimize inventory levels and enhance production scheduling capabilities to prevent stockouts, especially given the critical healthcare context in which these products are utilized.

Examining cycle times, we observed subtle yet significant variations among the products. While packing times were identical across all items, significant variations were evident in washing, tubing, and hot-forming stages. Vials have the longest total cycle time, primarily driven by extended washing and tubing phases. Specifically, the washing cycle for vials is notably longer, contributing to an approximately 3-hour overall increase compared to ampoules. These variations imply that targeted process improvements in the washing and tubing stages, particularly for vials, could significantly enhance overall production efficiency and throughput.

The rejection rate data further underscores critical areas for quality and process control improvements. Vials face the highest rejection rate, largely due to contamination and air bubbles. Syringes encounter significant issues with bent tubing, while ampoules predominantly suffer from glass breakage. These findings indicate clear opportunities for targeted quality control enhancements. Implementing rigorous inspections and process refinements—especially within contamination control procedures for vials and tubing adjustments for syringes—could markedly reduce rejections, thereby saving costs and improving yield.

Action-Oriented Recommendations

To address these insights comprehensively, the following actionable recommendations are suggested:

1. Optimize Inventory Management

Implement dynamic inventory management systems capable of rapidly adjusting to the rising and fluctuating demand forecasts, particularly for ampoules, given their steep demand growth.

2. Enhance Process Efficiency

Initiate process optimization projects focused on the washing and tubing stages for vials to reduce cycle time.

Conduct targeted process audits and training sessions specifically addressing bent tubing in syringes.

3. Quality Control Improvements

Introduce advanced contamination detection technologies and strengthen air bubble detection methods for vials.

Enhance glass handling protocols to significantly reduce breakage incidents in ampoule manufacturing.

By addressing these specific points, the company can mitigate supply risks, effectively manage increased demand, and enhance overall product quality, thereby solidifying its supply chain resilience and competitive positioning in the market.