FMCG Manufacturing Performance Report

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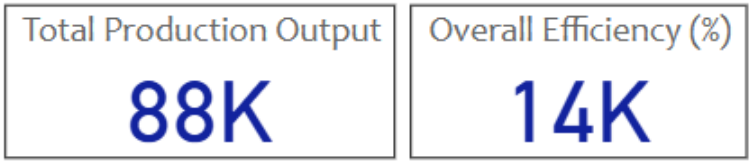
Note: This analysis was conducted using self-created data and visualized in **Power BI** to demonstrate the impact of **Lean Six Sigma methodologies** on FMCG manufacturing performance.

Introduction

This report analyzes the manufacturing performance of an FMCG production unit using Lean Six Sigma principles. The objective is to assess efficiency, reduce material wastage, optimize downtime, and improve production processes.

Methodology:

- *Data Source: The dataset was self-created to simulate real-world FMCG production data.*
- *Tool Used: Power BI was used for visualization, analysis, and insights generation.*



Key Metrics Overview

Energy Usage	*1.68K kWh*
Total Production Output	*88K units*
Overall Efficiency	*14K*
Material Wastage	*2,931 ml*
Efficiency Growth	*569% (Goal: 81, +600%)*
Downtime Reduction	*225 minutes (Goal: 8.44, +2,566%)*

Lean Six Sigma Analysis

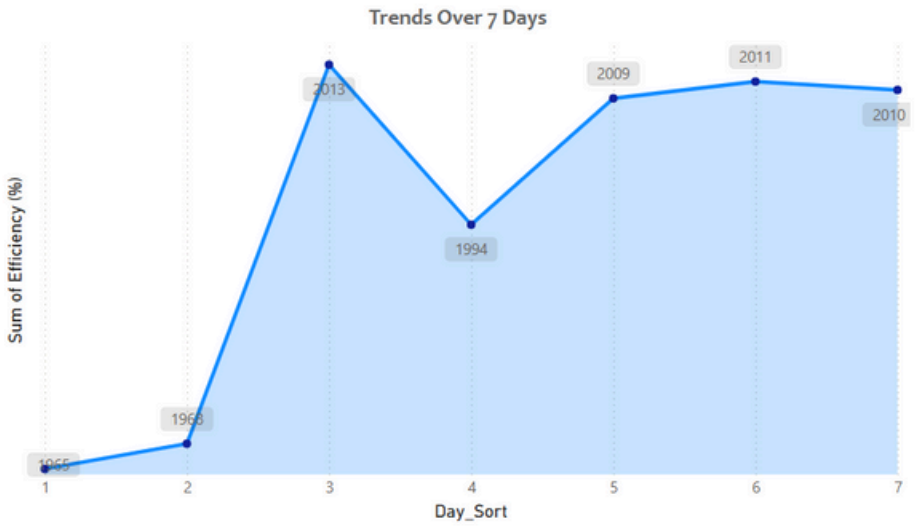
a) Define

The key problem areas identified in the manufacturing process include high energy consumption, material wastage, production inefficiencies, and downtime across different lines.

b) Measure

Data was collected over a period of seven days, analyzing efficiency trends, defect rates, energy consumption vs. wastage, and downtime across production lines.

Visualization Method: Power BI's line charts and bar charts were used to track trends.



Data Analysis & Insights

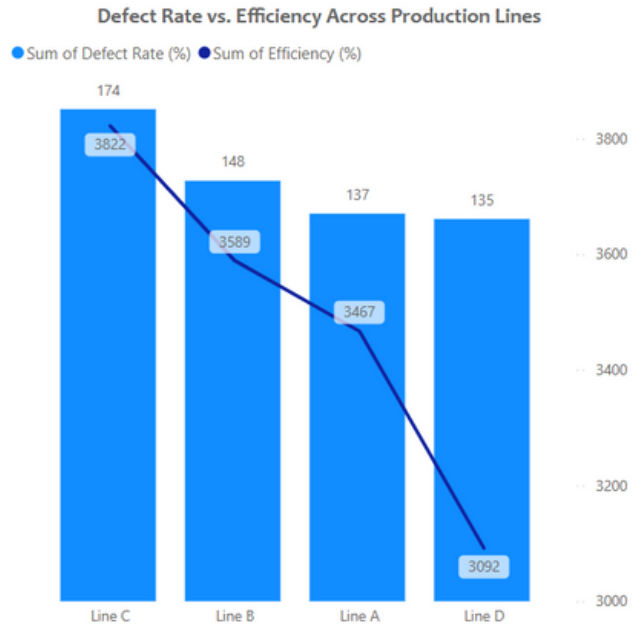
c) Analyze

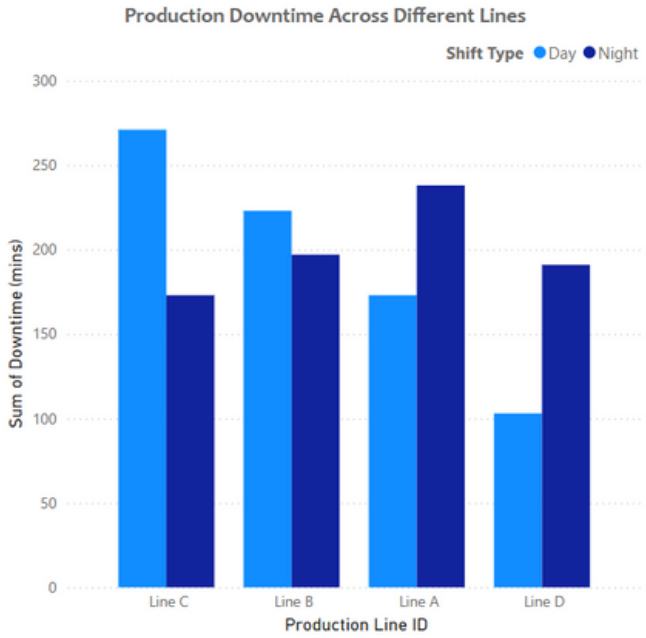
Defect Rate vs. Efficiency

- Line C has the highest defect rate (174 defects), correlating with an efficiency drop.
- Line D shows the lowest defect rate, indicating stable operations.

Production Downtime Across Different Shifts

- Night shifts experienced higher downtime than day shifts.
- Process improvements can reduce unexpected shutdowns.



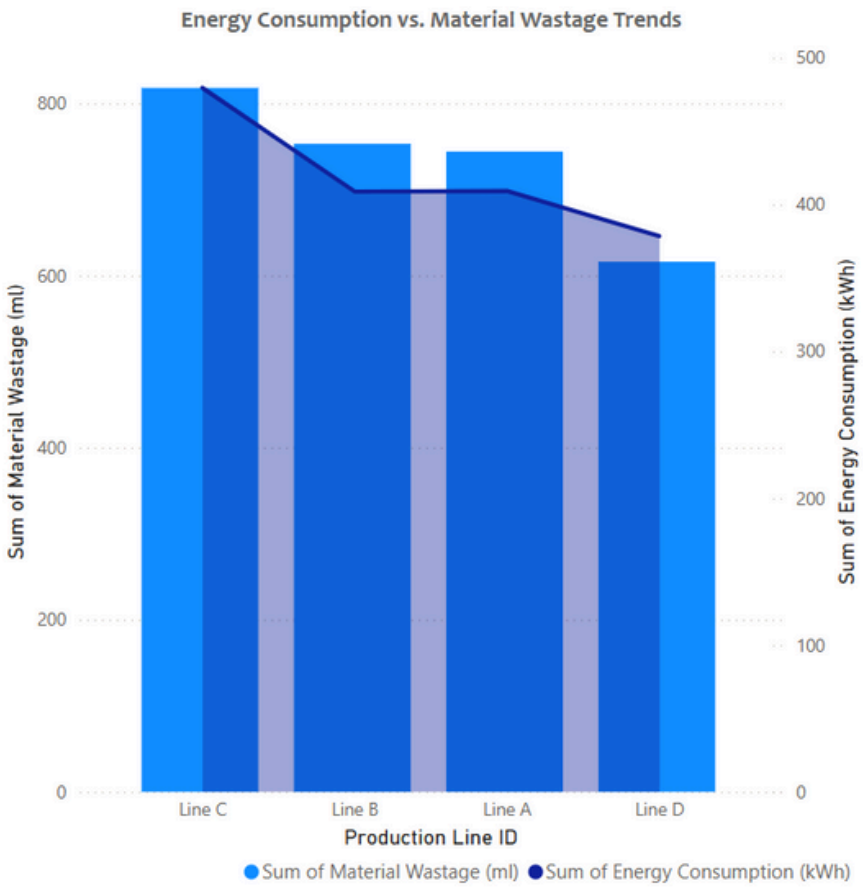


Visualization Method: Power BI's bar charts were used to compare defect rates and downtime.

Energy & Wastage Optimization

Energy Consumption vs. Material Wastage

- A direct relationship is observed—higher energy usage increases material wastage.
- Optimizing energy efficiency can lead to better resource utilization.



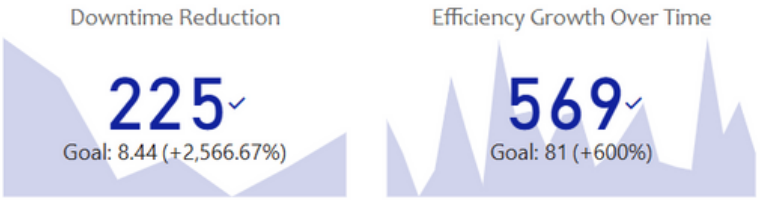
Visualization Method: A dual-axis bar & line chart was created in Power BI to track consumption and wastage.

Suggested Improvements

d) Improve

To enhance efficiency, the following strategies are recommended:

- Predictive maintenance to minimize downtime.
- Energy optimization through automation.
- Quality control measures to reduce defect rates.

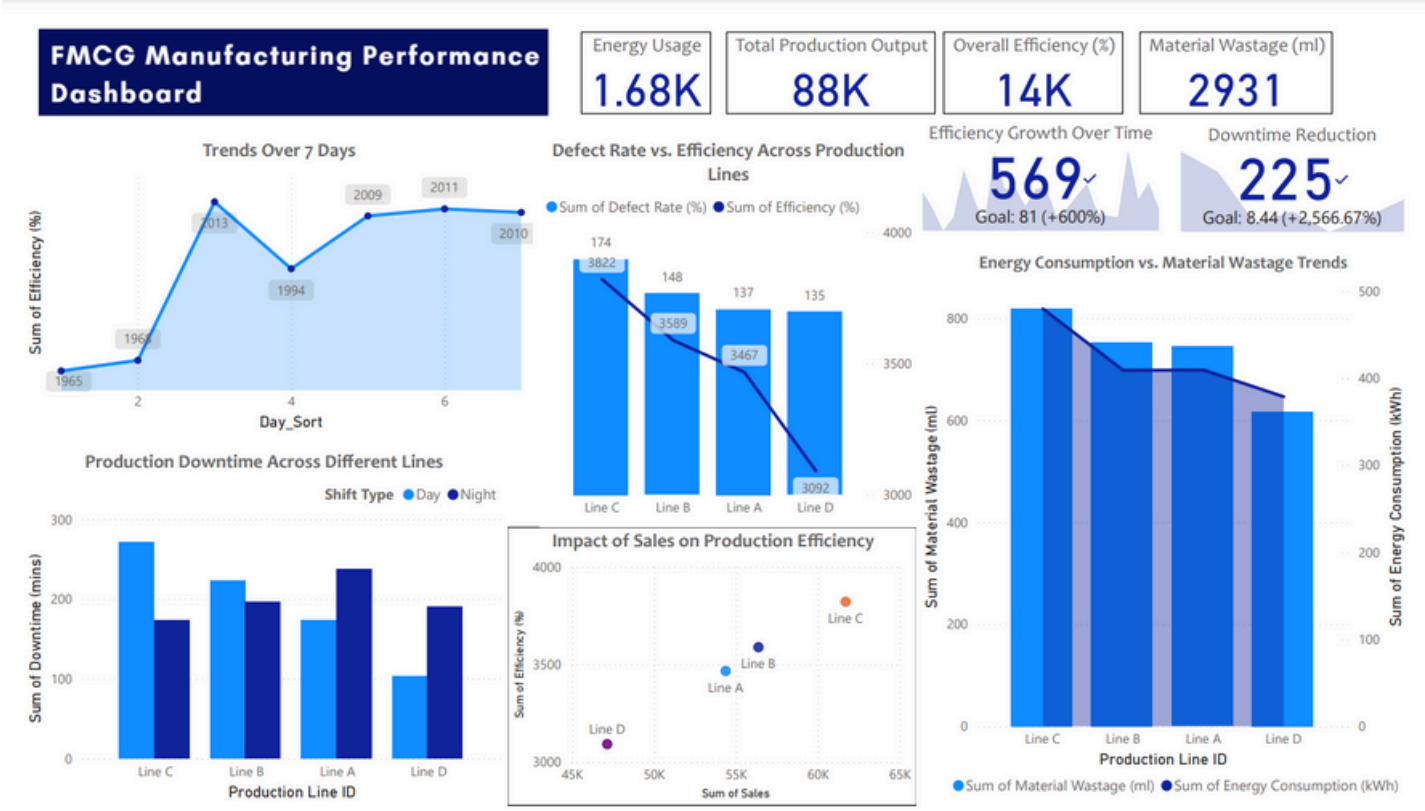


Visualization Method: Power BI's text & icon visuals were used to highlight improvement areas.

Control & Continuous Monitoring

e) Control

- Power BI dashboards ensure real-time tracking of efficiency, wastage, and downtime.
- Regular audits and Six Sigma training will sustain improvements.



Visualization Method: Power BI's interactive dashboards allow continuous monitoring.

Conclusion

By applying Lean Six Sigma, the following improvements can be achieved:

- Reduced material wastage and energy consumption
- Improved efficiency and production output
- Optimized downtime management

References & Sources

- This dataset was *self-created* for analysis.
- *Power BI* was used for data visualization and insights.
- *Lean Six Sigma principles* were referenced from industry best practices.
- GitHub Repository: [FMCG-Manufacturing-Performance-Analysis]