**Inventory Forecasting and Optimization Using Machine Learning and Power BI**

**Problem:**

Businesses often struggle with inventory stockouts or overstocking due to inaccurate demand prediction. Manual reorder planning increases risks and costs.

**Objective:**

Forecast monthly product-level demand using ML and recommend optimized reorder points with safety stock to reduce stockouts and holding costs.

**Methodology:**

* Used Prophet to forecast demand for 24 products
* Calculated reorder points using average demand during lead time + safety stock (z = 1.65)
* Created Power BI dashboard with reorder alerts and SKU insights

**Results:**

* 24 products reliably forecasted with MAPE < 40%
* Reorder thresholds identified for all high-demand SKUs
* Interactive dashboard allowed SKU-level inventory decisions

**Tools Used:**

Python, Prophet, Power BI, Excel

**Outcome:**

Improved visibility into inventory risk and enabled data-driven decision-making with automated alerts