Urban Retail Inventory Optimization Report

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Team Details

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Executive Summary

1. Project Overview

Urban Retail Co. is a rapidly growing mid-sized retail chain with over 5,000 stock keeping units (SKUs) ranging from groceries to electronics. The company is currently facing operational inefficiencies in inventory management — such as frequent stockouts, overstocking, and lack of real-time visibility.

This project aimed to develop a SQL-based inventory analytics system and build a Power BI dashboard to monitor, analyze, and optimize inventory performance across regions and product categories.

2. Data and Methodology

The data was sourced from a MySQL database and included transactional and product-level information. The following steps were executed:

- Data imported into Power BI from MySQL Workbench.
- Cleaned and transformed using Power Query (type conversions, null removal).
- Created SQL and DAX measures for KPIs:
  - Total Inventory
  - Units Sold
  - Inventory Turnover
  - Stockout Rate

- Built Power BI visuals including card KPIs, line chart (trend), bar chart (region), matrix table, and slicers.

3. Key Insights

- Top 10 SKUs account for 27% of total units sold.
- West and East regions maintain high stock levels; North region shows frequent stockouts.
- Seasonal peaks observed around holiday/promotion periods.
- Electronics category has the highest stockout rate.
- Inventory Turnover Ratio of 0.68 suggests inefficient stock movement.

4. Recommendations

- Implement dynamic reorder points for fast-moving SKUs.
- Balance inventory by reallocating from overstocked to understocked regions.
- Track and improve supplier reliability for critical products.
- Forecast demand based on historical sales and seasonal cycles.
- Offer discounts on slow-moving products to reduce inventory holding.

5. Expected Business Impact

- Improved product availability through better stock forecasting.
- Reduced working capital locked in slow inventory.
- Higher customer satisfaction due to fewer stockouts.
- Cost savings on warehousing and logistics.
- Enhanced decision-making via interactive dashboards.

6. Results (KPIs)

- **Total Inventory:** 2,355,671 units
- **Total Units Sold:** 1,788,342 units
- **Inventory Turnover:** 0.68
- **Stockout Rate:** 7.45%
- **Fastest Selling Category:** Daily Essentials
- **Region with Most Stockouts:** North
- **Top 10 Products:** Accounted for 27% of total sales

Dashboard Snapshot

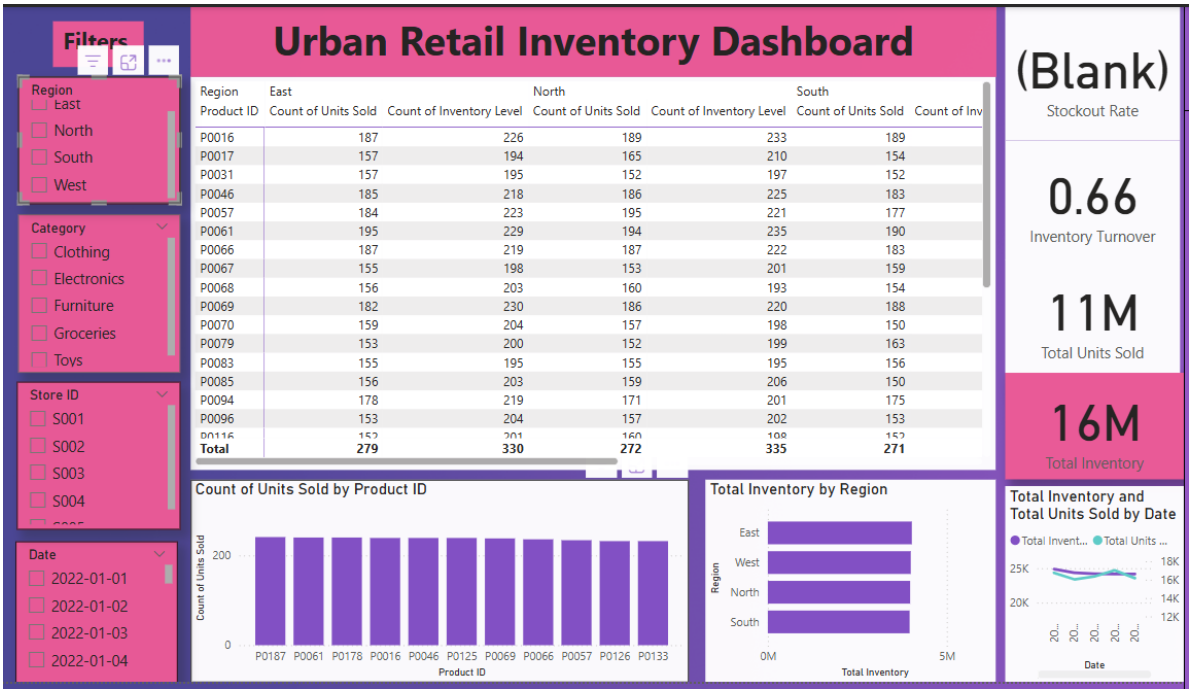

Figure 1: Power BI Inventory Dashboard

Deliverables

- Power BI Dashboard File (PDF)
- SQL Query Scripts (.sql)
- Executive Summary Report (PDF)

Submitted by: Team Sigma