Retail Enterprise Analytics

Volunteer Analytics Consultant Project

Business Context

A multi-city retail supermarket chain experienced revenue stagnation, margin fluctuations, and operational inefficiencies. The organization required end-to-end analytics to assess performance and enable strategic decision-making.

Data Architecture & Approach

Designed and implemented a relational database schema in SQL Server separating order headers from line items. Applied foreign key constraints, ensured referential integrity, and developed a data quality validation pipeline using SQL and Python before building a star schema model in Power BI.

Key KPIs Engineered

1. Total Revenue & Revenue Growth
2. Gross Profit & Profit Margin Percentage
3. Average Order Value (AOV) using DISTINCT logic
4. Store Performance Ranking
5. Category & Sub-category Contribution
6. Customer Revenue Distribution
7. Sales Velocity (Units Sold)

Key Insights

1. Revenue is highly diversified across customers with low concentration risk.
2. Hyderabad leads in total revenue driven by higher transaction volume.
3. Electronics category generates the highest margin while Grocery drives volume.
4. No single SKU dominates revenue, indicating balanced portfolio performance.

Strategic Recommendations

1. Scale high-margin categories such as Electronics.
2. Protect and expand high-volume Grocery segments.
3. Optimize low-performing SKUs through bundling or rationalization.
4. Replicate top-performing store strategies across other cities.

Project Limitations

Product master lacked product_name field. Inventory dataset was snapshot-based, limiting turnover analysis. No campaign-level promotional dataset was available.