Grocery Pricing & Inventory Dashboard

Exploratory Data Analysis on grocery inventory using Python, SQL, and Power BI to uncover pricing insights and support data-driven retail decisions.

DATASET OVERVIEW

Understanding the Data

Product Details

Category, name, weight, and quantity data for quick-commerce platforms

Pricing Structure

MRP, discount percentage, and discounted selling price

Inventory Status

Stock availability tracking with boolean out-of-stock indicators

PYTHON ANALYSIS

Data Preparation & Cleaning

01

Data Loading

Imported dataset using pandas

02

Initial Exploration

Used df.info() and .describe() for structure analysis

03

Missing Data Handling

Checked null values and imputed missing data

04

Data Type Correction

Corrected 3 columns to proper data types

05

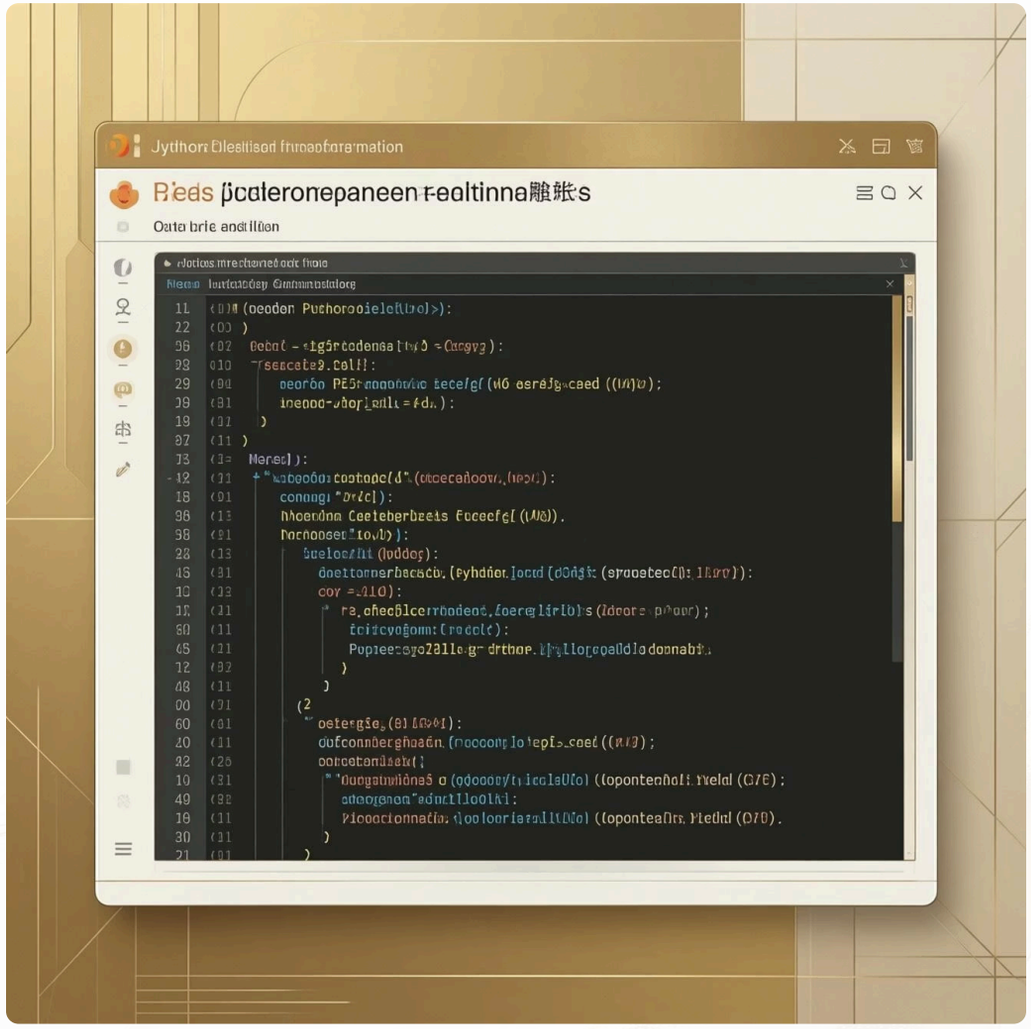
Column Standardization

Renamed columns to snake_case for readability

Feature Engineering

New Calculated Metrics

- Discount amount
- Price per gram
- Total stock value
- Category-level aggregations



Enhanced dataset with derived metrics to enable deeper pricing and inventory analysis.

KEY INSIGHTS

Python Analysis Results

Average Selling Price by Category

Identified pricing patterns across product categories

Total Quantity Sold by Category

Analyzed sales volume distribution

Highest Discount Products

Discovered top promotional opportunities

Critical Inventory Findings

Top Expensive Products

Identified premium items with highest MRP values for strategic pricing

Out of Stock Products

Tracked unavailable items to prevent lost sales opportunities

Connected Python to MySQL Database for advanced SQL analysis and querying.

SQL ANALYSIS

Key Business Questions Answered

1 **Top 10 Best-Value Products**

Based on discount percentage

2 **High MRP Out-of-Stock Items**

Revenue loss opportunities

3 **Estimated Revenue by Category**

Financial performance analysis

4 **Premium Low-Discount Products**

MRP > ₹500, discount < 10%

Advanced SQL Insights

Top 5 Categories

Highest average discount percentage identified

Price Per Gram Analysis

Best value for products above 100g

Product Segmentation

Grouped into Low, Medium, Bulk categories

8

SQL Queries

Comprehensive business analysis performed

VISUALIZATION

Interactive Power BI Dashboard

Built comprehensive dashboard to present insights visually with real-time monitoring capabilities for pricing and stock levels.

RECOMMENDATIONS

Business Recommendations

Promote Bulk Products

Market as cost-effective options

Price Per Gram Metric

Use as key pricing decision factor

Controlled Discounts

Maintain strategies to protect margins

Monitor Quantity Trends

Optimize inventory planning

Leverage Dashboards

Real-time pricing and stock monitoring