

Project Report

Tools Used: SQL, Power BI

Date: June 16, 2025

1. Project Overview

This project analyzes customer and product data for a simulated retail business. The objective was to extract meaningful insights using SQL and present them in an interactive Power BI dashboard. The analysis includes customer segmentation, spending patterns, product performance, and customer satisfaction based on feedback.

2. Data Sources

Source File/Table	Description
customers	Demographic details like age, gender, income
transactions	Purchase records with product and amount
products	Product information including category
feedback	Comments and satisfaction scores

3. Objectives

- Segment customers by age group, gender, and income level
- Analyze spending patterns across customer segments
- Identify the top 20 high-value customers
- Evaluate product performance by sales and satisfaction
- Classify customer feedback as positive or negative

4. Key Metrics (KPIs)

Metric	Description
Total Revenue	Total spend across all transactions
Total Transactions	Count of all purchases
Average Transaction Value	Avg. amount spent per transaction
Total Customers	Unique customers based on customer ID
Average Rating	Mean satisfaction score from feedback

5. Insights & Analysis

5.1 Customer Segmentation

- Most spending came from the '55+ Medium Income' segment.
- Female customers aged 25–34 also showed strong transaction volume.
- Grouping was done using CASE statements in SQL by age, gender, and income.

5.2 Product Performance

- Top-selling products included Electronics and Apparel items.
- Products were ranked by total quantity sold and total revenue.
- SQL joins across transactions and products helped in performance analysis.

5.3 Feedback Analysis

- Comments were classified in SQL using keywords (e.g., 'good', 'bad').
- Positive comments were more frequent for products like Wireless Earbuds.
- Some products had high sales but also negative feedback, indicating potential issues.

6. Visualizations Summary

- KPI Cards: Total Revenue, Total Transactions, Avg Rating, Total Customers
- Bar Chart: Average Spend by Income Level
- Pie Chart: Customer Gender Distribution
- Matrix Table: Product Feedback Summary
- Donut Chart: Sentiment (Positive vs. Negative)
- Line Chart: Monthly Revenue Trends

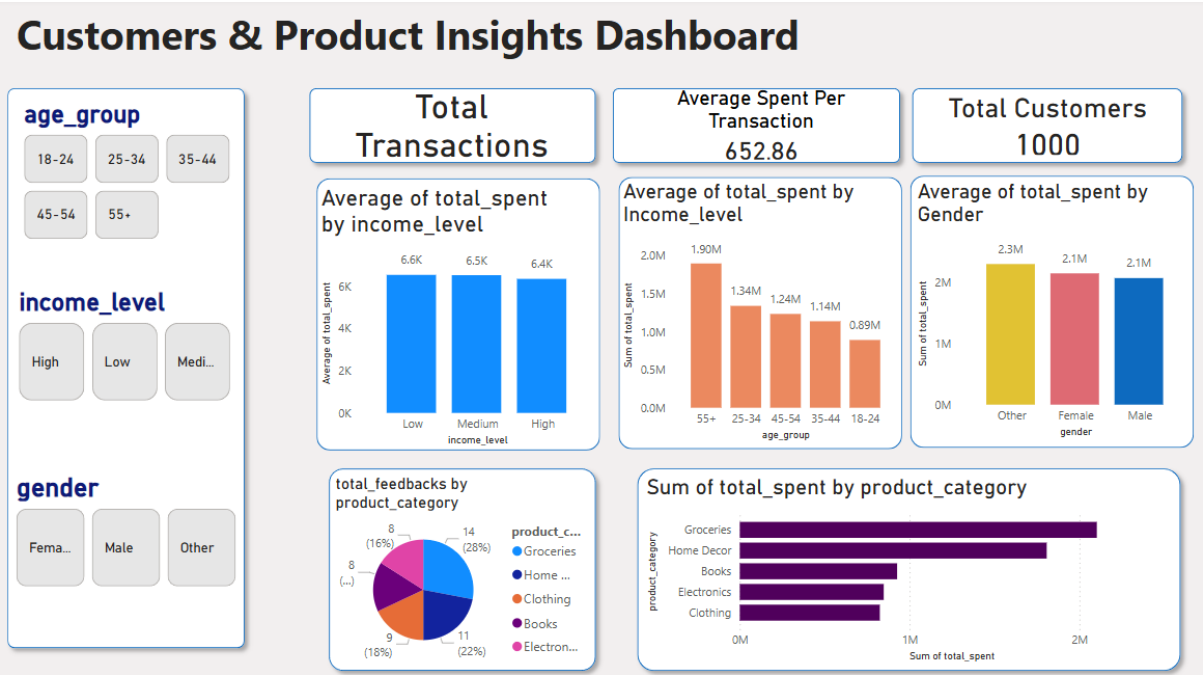
7. Business Recommendations

- Focus marketing on 55+ Medium Income customers
- Improve quality for high-volume but low-rated products
- Encourage feedback collection to track satisfaction
- Offer loyalty programs to top 20 high-value customers

8. Tools & Skills Demonstrated

- SQL: Data extraction, CASE-based segmentation, aggregation, joins
- Power BI: Data modeling, slicers, KPI visualization, DAX measures

10. Appendix



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