Customer Behavior Analysis

End-to-End Data Analytics Project
Tools: Python | SQL | Power BI

1. Executive Summary

This project presents a corporate-grade end-to-end data analytics solution that transforms raw customer shopping data into actionable business intelligence. Using Python for data preparation, SQL for structured analysis, and Power BI for visualization, the project delivers insights into customer behavior, revenue drivers, and subscription trends to support data-driven decision-making.

2. Introduction

Understanding customer behavior is essential for organizations aiming to improve sales performance and customer retention. This project simulates a real-world analytics workflow, covering the complete lifecycle from raw data ingestion to executive-level reporting.

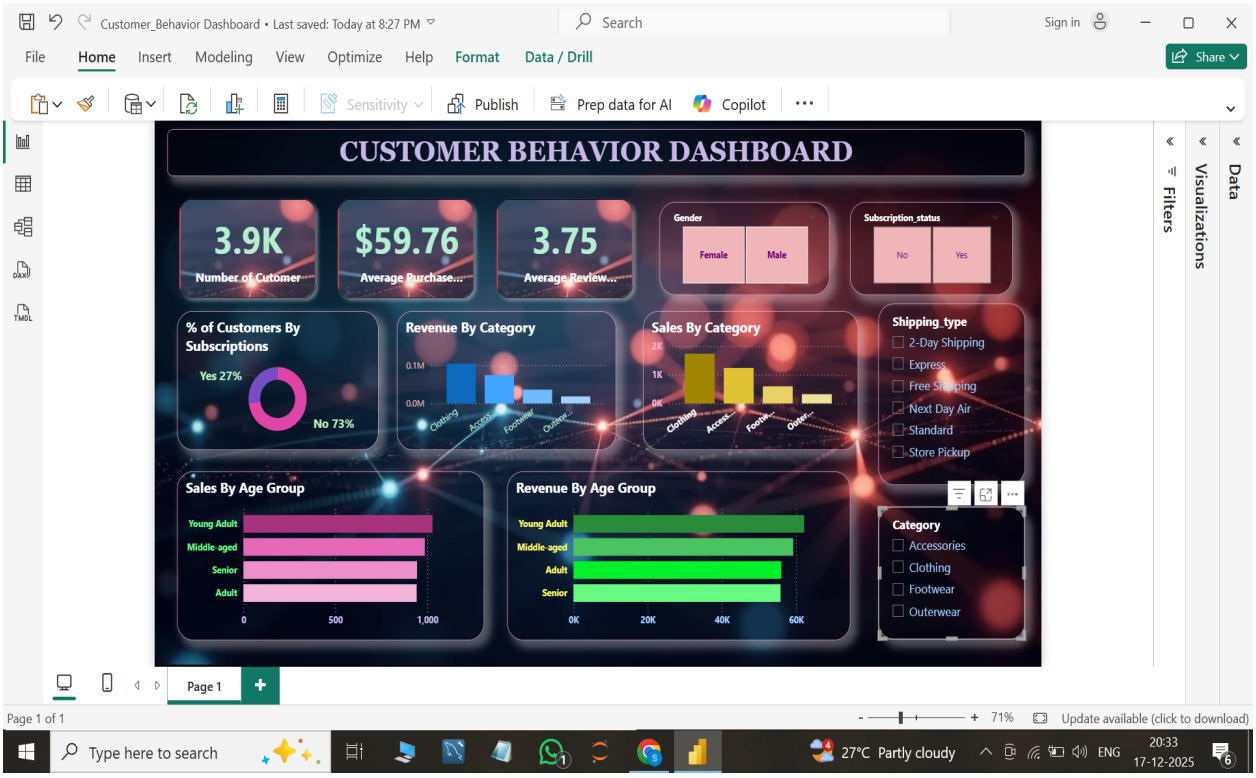
3. Project Objectives

• Analyze customer demographics and purchasing behavior
• Identify high-performing product categories
• Evaluate subscription and loyalty trends
• Build an interactive dashboard for stakeholders

4. Methodology

Python: Data cleaning, transformation, and exploratory data analysis.
SQL: Database creation and business-driven analytical queries.
Power BI: Interactive dashboard development and insight visualization.

5. Power BI Dashboard Overview



The Customer Behavior Dashboard provides a consolidated view of key performance indicators such as total customers, average purchase value, average review score, revenue by category, sales by age group, and subscription distribution. Interactive filters enable stakeholders to drill down into specific customer segments.

6. Key Insights

- Certain product categories contribute significantly higher revenue
- Subscribed customers show higher engagement and purchase frequency
- Specific age groups drive the majority of sales
- Standard and free shipping options are most preferred

7. Business Recommendations

- Strengthen customer subscription and loyalty programs
- Focus marketing efforts on high-value customer segments
- Optimize inventory based on top-performing categories
- Align logistics strategy with customer shipping preferences

8. Conclusion

This project demonstrates the effective use of Python, SQL, and Power BI to transform raw customer data into strategic business insights. The resulting dashboard and report support informed decision-making and reflect real-world corporate analytics practices.

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