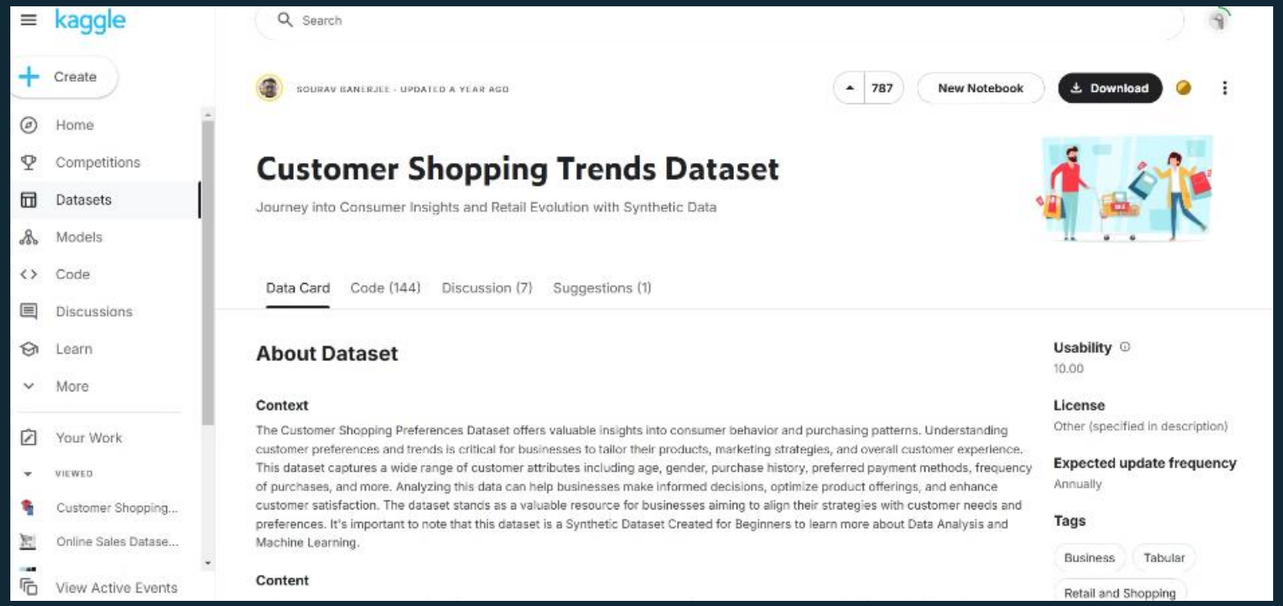
Customer Segmentation Analysis using Power BI

This presentation explores the use of Power BI to analyze customer shopping trends and identify distinct customer segments based on purchasing behavior, demographics, and preferences. The goal of this analysis is to provide insights for businesses to tailor their marketing strategies, improve customer engagement, and optimize resource allocation.

Data Source and Overview



Dataset: Kaggle

This analysis utilizes a customer shopping trends dataset sourced from Kaggle, providing insights into various aspects of customer behavior and preferences.

Scope of Analysis

The dataset includes information on customer demographics, purchase history, product categories, order values, and other relevant metrics, enabling a comprehensive analysis of customer segmentation.

Problem Statement

Identify Customer Segments

The objective is to identify distinct customer segments based on their unique characteristics and purchase behaviors. This allows for targeted marketing and improved customer experiences.

Optimize Marketing Efforts

By understanding customer segments, businesses can tailor their marketing strategies to resonate with each group, maximizing reach and impact. For instance, a "loyal customer" segment might receive personalized offers, while a "new customer" segment could benefit from introductory discounts.

Enhance Resource Allocation

Data-driven insights from customer segmentation can guide resource allocation, ensuring that marketing budgets and efforts are directed towards the most valuable customer segments.

Data Preprocessing

1 Data Cleaning

This involves addressing missing values, handling duplicates, and correcting data inconsistencies to ensure data quality and reliability.

2 Data Transformation

Transformations involve restructuring data by splitting columns, merging tables, and creating new calculated fields for analysis.

3 Data Type Corrections

Data types should be consistent with the data they represent (e.g., dates as Date, numbers as Decimal). This ensures accurate calculations and analysis.

4 Calculated Columns and Measures

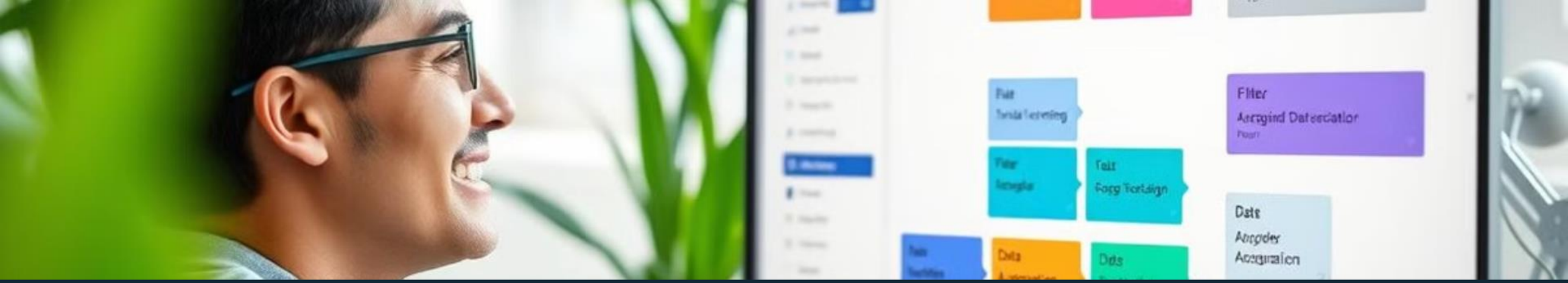
DAX (Data Analysis Expressions) is used to create calculated columns and measures for advanced analysis and visualization.

DAX Measures and Calculations

DAX Measures

1. **Total Sales:**
   - Total Sales = SUM(Sales[Amount])
2. **Total Profit:**
   - Total Profit = SUM(Sales[Profit])
3. **Average Price per Unit:**
   - Avg Price per Unit = AVERAGE(Sales[PricePerUnit])
4. **Yearly Profit:**
   - Profit by Year = CALCULATE(SUM(Sales[Profit]), Sales[Year])
5. **Sales by Category:**
   - Category Sales = CALCULATE(SUM(Sales[Amount]), Sales[Category])
6. **Profit Margin:**
   - Profit Margin = DIVIDE(SUM(Sales[Profit]), SUM(Sales[Amount]))
7. **Units Sold by Region:**
   - Units Sold by Region = CALCULATE(SUM(Sales[Units]), Sales[Region])

These DAX measures are essential for analyzing sales performance, profitability, and identifying 4trends over time.



Data Transformations in Power BI

1 Power Query Editor

Power Query Editor allows for advanced data manipulation, including filtering, merging, and aggregating data for analysis.

2 Data Relationships

Relationships between tables are established to enable cross-table analysis and calculations, providing a holistic view of the data.

3 Column Calculations

New columns are created using DAX for derived metrics like Profit Margin, Average Sales per Customer, and Top 10 Products by Sales.

4 Filters

Filters are applied to focus on specific data subsets relevant to the analysis, allowing for focused insights and visualizations.

Customer Segmentation: Initial Insights

Total Customers

3,900

Total Revenue

$233,000

Average Rating

3.75

This initial overview provides a foundation for further segmentation analysis, highlighting key metrics related to the customer base and revenue.

Page 1: Customer Demographics and Preferences

Age Category

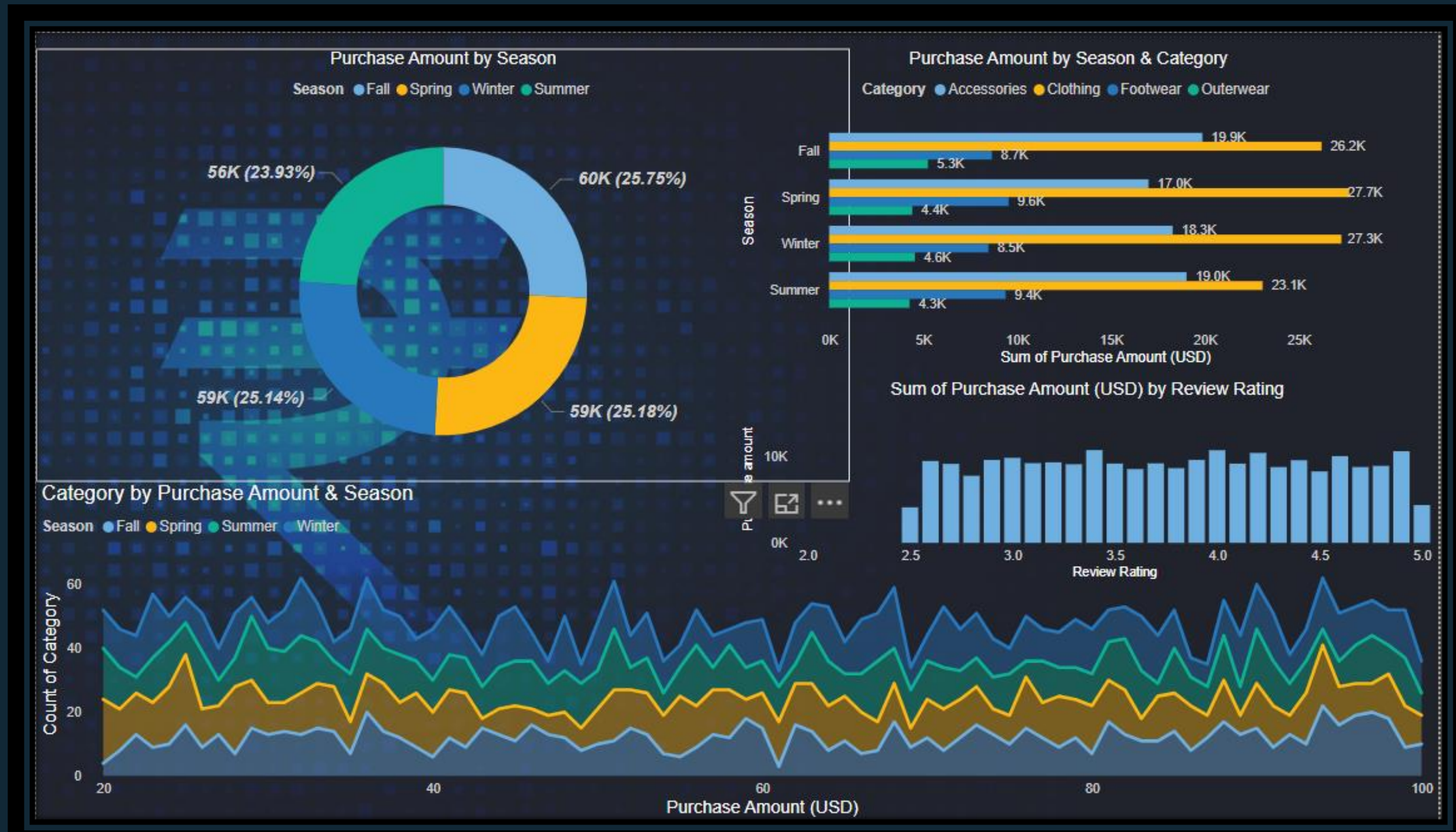
Customers aged 40-60 years make the most purchases, indicating a potential target segment for marketing efforts.

Gender Distribution

Male customers represent a larger proportion of the overall customer base, suggesting potential differences in purchase behavior between genders.

Subscription Status

Non-subscription customers dominate purchase amounts, especially in the 40-60 age group, highlighting the importance of this segment for generating revenue.



Page 2: Sales and Seasonal Trends

Clothing

Highest sales volume across all seasons, especially in Spring.

Accessories

Strong sales in Fall, suggesting potential seasonal marketing opportunities.

Footwear

Peak sales in Spring, indicating a seasonal trend for footwear purchases.

Outerwear

Elevated sales in Fall, aligned with seasonal demand for outerwear items.

Page 3: Shipping and Payment Insights

1

Free Shipping

Dominates shipping preferences, suggesting a potential strategy to offer free shipping promotions for customer retention.

2

Credit Card

Most popular payment method, indicating a need for robust security measures and seamless online payment processing.

3

Seasonal Trends

Winter displays the highest purchase frequency, suggesting potential seasonal marketing strategies to capitalize on this trend.