Customer Shopping Analysis

1. Project Overview

This project examines customer shopping behaviour using transactional data from 3,900 purchases across multiple product categories.

The purpose of the analysis is to understand:

- How customers spend their money
- Which products and categories perform best
- How different customer groups behave (age, gender, location)
- How discounts, shipping methods, and subscription status affect purchasing decisions
- What factors contribute to customer satisfaction and repeat purchases

2. Dataset Summary

- Total Rows: 3,900
- Total Columns: 18

  Key Feature Groups

  2.1. **Customer Demographics**

  Age, Gender, Location (State), Subscription Status

  2.2. **Purchase Details**

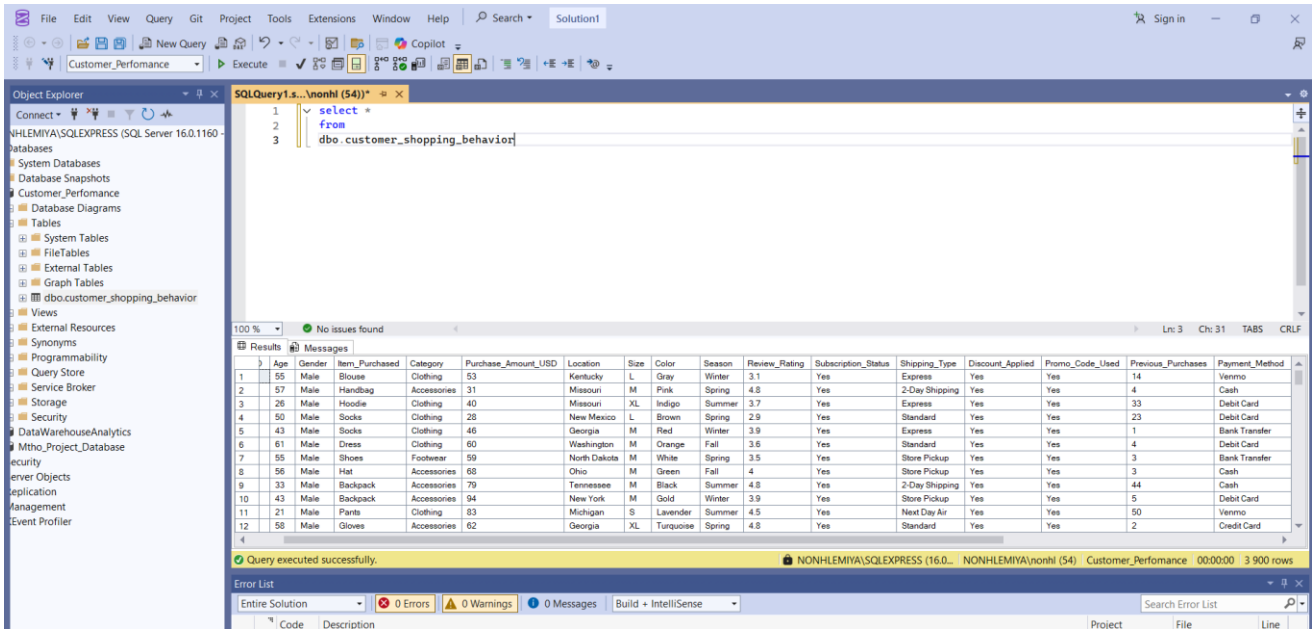
  Item Purchased, Category, Purchase Amount, Season, Size, Colour

  2.3. **Shopping Behaviour**

  Discount Applied, Promo Code Used, Previous Purchases, Frequency of Purchases, Review Rating, Shipping Type

3. Exploratory Data Analysis (EDA)

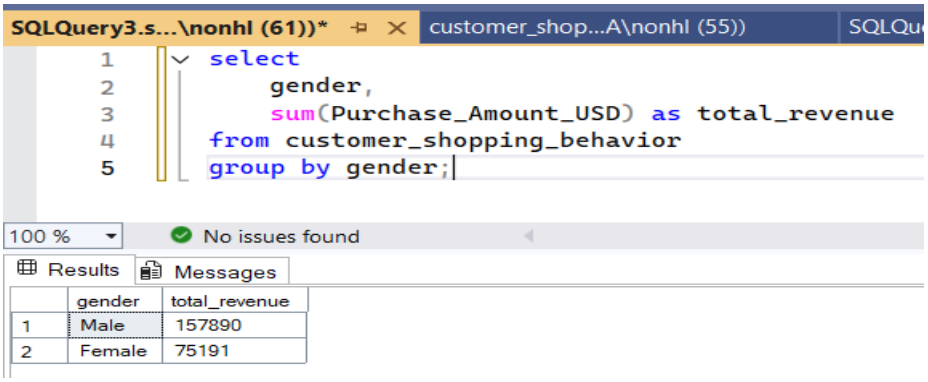
I began with data preparation and cleaning in SQL and viewed data



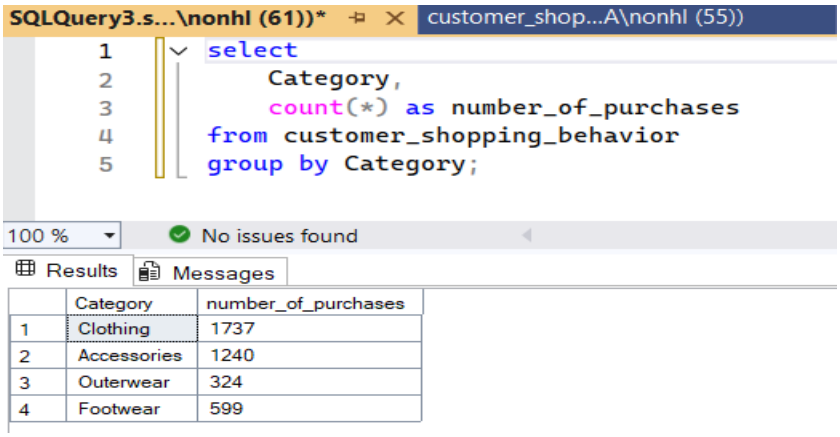
4. Data Analysis using SQL (Business Transactions)

I performed structured analysis in SQL Server to answer **key business questions:**

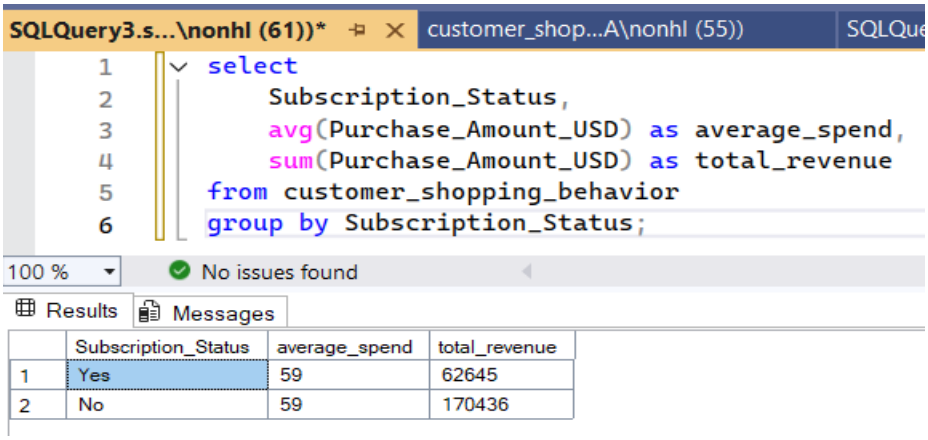
4.1. **Revenue by Gender** – Compared total revenue generated by male vs. female customers.



4.2. **Top 5 Products by Rating** – Found products with the highest average review ratings. **Dimensions**



4.3. **Subscribers vs. Non-Subscribers** – Compared average spend and total revenue across subscription status. **Aggregates**



4.5. **Customer Segmentation** – Classified customers into New, Returning, and Loyal segments based on purchase history. , **Common table Exploratory**

```sql
;with cte as (
    select
        case
            when Previous_Purchases = 1 then 'New'
            when Previous_Purchases between 2 and 5 then 'Returning'
            else 'Loyal'
        end as Customer_Segment
    from dbo.customer_shopping_behavior
)
select
    Customer_Segment,
    count(*) as number_of_customers
from cte
group by Customer_Segment
order by number_of_customers;
```

100 % — No issues found

Results | Messages

	Customer_Segment	number_of_customers
1	New	83
2	Returning	341
3	Loyal	3476

4.6. **Top 3 Products per Category** – Listed the most purchased products within each category**. Window function**

```sql
WITH Ranked_Products AS (
    SELECT
        Category,
        Item_Purchased,
        purchase_count,
        ROW_NUMBER() OVER (PARTITION BY Category ORDER BY purchase_count DESC) AS rank
    FROM (
        SELECT
            Category,
            Item_Purchased,
            COUNT(*) AS purchase_count
        FROM customer_shopping_behavior
        GROUP BY Category, Item_Purchased
    ) AS Sub
)
SELECT *
FROM Ranked_Products
WHERE rank <= 3;
```

100 % — No issues found

Results | Messages

	Category	Item_Purchased	purchase_count	rank
1	Accessories	Jewelry	171	1
2	Accessories	Sunglasses	161	2
3	Accessories	Belt	161	3
4	Clothing	Blouse	171	1
5	Clothing	Pants	171	2
6	Clothing	Shirt	169	3
7	Footwear	Sandals	160	1
8	Footwear	Shoes	150	2
9	Footwear	Sneakers	145	3
10	Outerwear	Jacket	163	1
11	Outerwear	Coat	161	2

4.7. **Revenue by Age Group** – Calculated total revenue contribution of each age group. **Window Function**

```sql
SELECT
    CASE
        WHEN Age BETWEEN 13 AND 19 THEN 'teenager'
        WHEN Age BETWEEN 20 AND 35 THEN 'young adult'
        WHEN Age BETWEEN 36 AND 55 THEN 'adult'
        ELSE 'senior'
    END AS Age_Group,
    SUM(Purchase_Amount_USD) AS total_revenue
FROM customer_shopping_behavior
GROUP BY
    CASE
        WHEN Age BETWEEN 13 AND 19 THEN 'teenager'
        WHEN Age BETWEEN 20 AND 35 THEN 'young adult'
        WHEN Age BETWEEN 36 AND 55 THEN 'adult'
        ELSE 'senior'
    END
ORDER BY total_revenue desc;
```

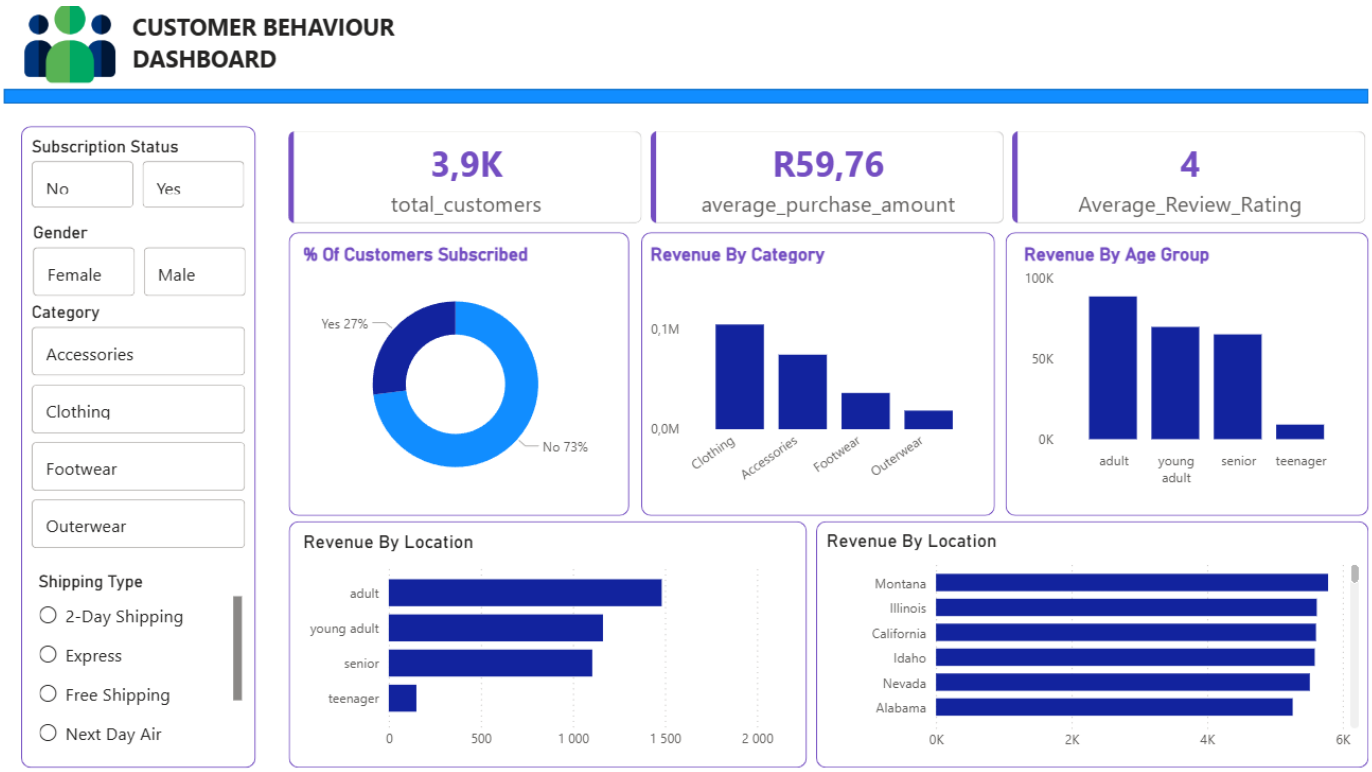
100 % — No issues found

Results | Messages

	Age_Group	total_revenue
1	adult	88853
2	young adult	69892
3	senior	65256
4	teenager	9080

5. Dashboard

Below is the I built an interactive dashboard in Power BI to present insights visually



6. Business Recommendation

Based on the analysis I have conducted above, following are the recommendations:

- **Boost Subscriptions** – Promote exclusive benefits for subscribers
- **Customer Loyalty Programs** – Reward repeats buyers to move them into the "Loyal" segment.