

# Customer Behaviour Analysis Report

## 1. Project Overview

This project analyzes customer purchasing behavior using Python, SQL, and Power BI. The objective is to identify revenue trends, customer segments, and subscription performance to generate actionable business insights.

## 2. Tools & Technologies Used

- Python (Pandas) – Data Cleaning & Preprocessing
- SQL (PostgreSQL) – Data Aggregation & Analysis
- Power BI – Dashboard Creation & Visualization

## 3. Key Analysis & Insights

- Majority customers are subscribed (~73%), showing strong loyalty.
- Clothing category generates highest revenue.
- Age group 46–60 contributes the highest revenue (29.05%).
- Younger age group (18–25) contributes least revenue.
- Subscription model plays a key role in customer retention.

## 4. Dashboard Screenshots



Object Explorer    Processes    customer\_beavio...    customer\_beavio...    customer\_beavio...    customer\_beavio...    customer\_beavio...@PostgreSQL 17\*

```

> FTS Configuration
> FTS Dictionaries
> FTS Parsers
> FTS Templates
> Foreign Tables
> Functions
> Materialized View
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```

customer\_beaviour/postgres@PostgreSQL 17

Query History

```

59 )
60   SELECT Customer_segment,
61        COUNT(*) AS "Number of Customers"
62   FROM customer_type
63  GROUP BY Customer_segment;
64 --8 What are the top 3 most purchased product within each category?
65 WITH ranked_products AS (
66   SELECT
67     "Category",
68     "Item Purchased",
69     COUNT(*) AS purchase_count,
70     ROW_NUMBER() OVER (PARTITION BY "Category" ORDER BY COUNT(*) DESC) AS rn
71   )
72   
```

Data Output Messages Notifications

age_group	total_revenue	revenue_percentage
46-60	67711	29.05
26-35	44342	19.02
36-45	43234	18.55
60+	43164	18.52
18-25	34630	14.86

Showing rows: 1 to 5 | Page No: 1 | of 1 | < < < > > > > >

The screenshot shows a Jupyter Notebook interface with the following details:

- Header:** localhost:8888/notebooks/Downloads%2FCustomer\_Shopping\_Behavior\_Analysis.ipynb
- Toolbar:** File, Edit, View, Run, Kernel, Settings, Help, Trusted.
- Code Cell [6]:** pip install openpyxl  
Defaulting to user installation because normal site-packages is not writeableNote: you may need to restart the kernel to use updated packages.  
Requirement already satisfied: openpyxl in c:\programdata\anaconda3\lib\site-packages (3.1.5)  
Requirement already satisfied: et-xmlfile in c:\programdata\anaconda3\lib\site-packages (from openpyxl) (1.1.0)
- Code Cell [7]:** df = pd.read\_excel("customer\_shopping\_behavior.xlsx")  
df.head()
- Data Preview:** A table showing the first 5 rows of the dataset. The columns are: Customer ID, Age, Gender, Item Purchased, Category, Purchase Amount (USD), Location, Size, Color, Season, Review Rating, Subscription Status, Shipping Type, Discount Applied, Promo Code Used, Previous Purchases, and Payment Method.

	Customer ID	Age	Gender	Item Purchased	Category	Purchase Amount (USD)	Location	Size	Color	Season	Review Rating	Subscription Status	Shipping Type	Discount Applied	Promo Code Used	Previous Purchases	Payment Method
0	1	55	Male	Blouse	Clothing	53	Kentucky	L	Gray	Winter	3.1	Yes	Express	Yes	Yes	14	Visa
1	2	19	Male	Sweater	Clothing	64	Maine	L	Maroon	Winter	3.1	Yes	Express	Yes	Yes	2	Credit Card
2	3	50	Male	Jeans	Clothing	73	Massachusetts	S	Maroon	Spring	3.1	Yes	Free Shipping	Yes	Yes	23	Credit Card
3	4	21	Male	Sandals	Footwear	90	Rhode Island	M	Maroon	Spring	3.5	Yes	Next Day Air	Yes	Yes	49	PayPal
4	5	45	Male	Blouse	Clothing	49	Oregon	M	Turquoise	Spring	2.7	Yes	Free Shipping	Yes	Yes	31	PayPal

## 5. Conclusion

The analysis highlights that middle-aged subscribed customers in the clothing category are the main revenue drivers. Businesses should focus on strengthening subscription programs, expanding clothing inventory, and implementing targeted marketing strategies.