

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

Customer Behavior Dashboard

Subscription Status

No Yes

Gender

Fema... Male

Category

Accessories

Clothing

Footwear

Shipping Type

☐ 2-Day Shippi...

☐ Express

☐ Free Shipping

☐ Next Day Air

☐ Standard

☐ Store Pickup

3.9K

Count of Customer ID

\$233K

Sum of Purchase Amount...

15K

Sum of Review Rating

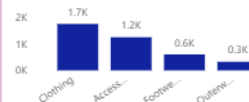
% of Customer by subscription status



Revenue by category



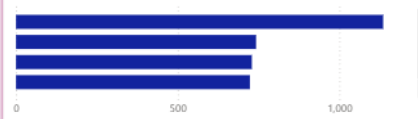
Sales by category



Revenue by age group



Sales by age group



Object Explorer

- FTS Configuration
- FTS Dictionaries
- FTS Parsers
- FTS Templates
- Foreign Tables
- Functions
- Materialized View
- Operators
- Procedures
- Sequences
- Tables
- Trigger Functions
- Types
- Views
- Subscriptions
- customer_behaviour
 - Casts
 - Catalogs
 - Event Triggers
 - Extensions
 - Foreign Data Wrappers
 - Languages
 - Publications
 - Schemas (1)
 - public
 - customer_behaviour

Processes x customer_behav... x customer_behav... x customer_behav... x customer_behaviour/postgres@PostgreSQL 17*

customer_behaviour/postgres@PostgreSQL 17

Query 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
```

Data Output Messages Notifications

Showing rows: 1 to 5 Page No: 1 of 1

	age_group	total_revenue	revenue_percentage
	text	numeric	numeric
1	46-60	67711	29.05
2	26-35	44342	19.02
3	36-45	43234	18.55
4	60+	43164	18.52
5	18-25	34630	14.86

localhost:8888/notebooks/Downloads%2FCustomer_Shopping_Behavior_Analysis.ipynb

Jupyter Customer_Shopping_Behavior_Analysis Last Checkpoint: yesterday

File Edit View Run Kernel Settings Help Trusted

JupyterLab Python [conda env:base] *

```
[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)

```
[7]: df = pd.read_excel("customer_shopping_behavior.xlsx")  
df.head()
```

```
[7]:
```

	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	Ver
1	2	19	Male	Sweater	Clothing	64	Maine	L	Maroon	Winter	3.1	Yes	Express	Yes	Yes	2	C
2	3	50	Male	Jeans	Clothing	73	Massachusetts	S	Maroon	Spring	3.1	Yes	Free Shipping	Yes	Yes	23	Cr
3	4	21	Male	Sandals	Footwear	90	Rhode Island	M	Maroon	Spring	3.5	Yes	Next Day Air	Yes	Yes	49	Pa
4	5	45	Male	Blouse	Clothing	49	Oregon	M	Turquoise	Spring	2.7	Yes	Free Shipping	Yes	Yes	31	Pa

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.