Project Report: Customer Shopping Behaviour Analysis

1. Executive Summary

This project analyses the shopping habits of 3,900+ customers using Python, SQL, and Power BI. The goal was to identify which customer segments (Age & Gender) contribute most to the revenue and how subscription status affects purchasing frequency.

2. Data Stack Used

- **Python:** For Data Cleaning and Age Grouping.
- **SQL (MySQL):** For performing deep-dive analysis and business queries.
- **Power BI:** For creating the final interactive dashboard.

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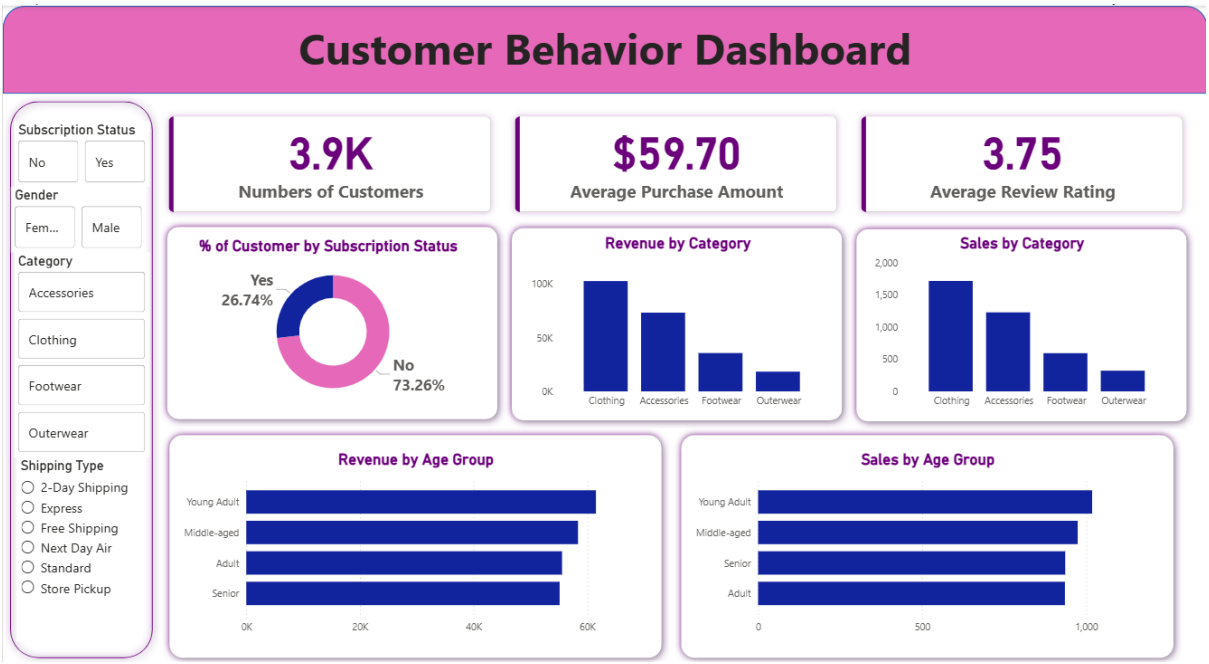
3. Data Visualization (The Dashboard)



Caption: Overview of the Customer Behaviour Dashboard showing key KPIs and Revenue charts.

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4. Key Insights & Findings

A. Demographic Performance

As shown in the charts, the **Young Adult** group (under 25) and **middle-aged** group are our primary revenue drivers.

B. Shipping & Subscription Trends

- **Express Shipping:** Data shows that customers using Express shipping tend to have a higher average order value.
- **Subscription Gap:** A significant number of repeat buyers are not yet subscribers.

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5. SQL Analysis (Logic & Proof)

I have written SQL queries to solve the Business questions.

One of them is as follows:-

Query: Revenue Contribution by Age Group

SQL

```
60
61      -- Q10 what is the revenue contribution of each age group?
62 •    SELECT
63          `Age_group`, SUM(`Purchase Amount (USD)`) AS total_revenue
64      FROM
65          customer_with_age_group
66      GROUP BY `Age_group`
67      ORDER BY total_revenue DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Age_group	total_revenue
Young Adult	61533
Middle-aged	58380
Adult	55569
Senior	55147

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6. Suggestions & Recommendations

- **Getting More Subscribers:**
    - **What I found:** Using SQL, I discovered that over **2,500 customers** have shopped more than 5 times but are not yet members (subscribers).
    - **My Suggestion:** The business should send these "regular customers" a special discount or a "Thank You" email to encourage them to join the subscription plan. This will help keep them loyal to the brand.
- **Focus on Top Selling Products (Clothing):**
    - **What I found:** The **Clothing** category is the most popular and brings in the most money across all age groups.

    - **My Suggestion:** Since clothes are selling the best, the store should always keep more stock of trendy clothes and spend more on advertising this category, especially for young and middle-aged shoppers.

- **Offering Free Fast Shipping:**
    - **What I found:** Customers who choose **Express Shipping** usually spend more money on their orders.
    - **My Suggestion:** We can offer "Free Express Shipping" if a customer buys items worth more than $100. This will encourage people to add 1 or 2 extra items to their cart just to get the fast delivery for free.

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7. Conclusion

In this project, I learned how to take raw, messy data and turn it into useful information for a business.

- I used **Python** to clean the data and group customers by age.
- I used **SQL** to ask deep questions and find hidden patterns.
- Finally, I built a **Power BI Dashboard** to show all these findings in a simple, visual way.

This project helped me understand how data can help a shop or business make better decisions to grow and keep their customers happy.