

Project Document and Recommendations

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Objectives

- Segment one-time customers into spending tiers using a 4-star rating system.
- Discover patterns by gender, age group, and product category
- Visualise insights in an interactive Excel dashboard
- Provide recommendations for improving marketing and sales strategies

Tools

The tools used for the project are :

- Python for data manipulation and feature engineering
- Google Sheets for data analysis and visualisation

Data set

The data set used for the project was taken from Kaggle, with the following [link](#).

The dataset has nine columns, which are :

- Transaction ID
- Date
- Customer ID
- Gender
- Age
- Product categories
- Quantity
- Price per Unit
- Total Amount

Data manipulation and feature engineering with Python

I created two new columns for customer segmentation: age group and spending tiers.

Segmentation of spending tiers is as follows:

I'll create 4 customer groups based on the Total Amount spent:

Spending Range	Star Level	Label
Lowest 25%	1	Budget Shoppers
25%–50%	2	Moderate Spenders
50%–75%	3	High Spenders
Top 25%	4	Premium Buyers

The process was documented with a Jupyter notebook, which can be viewed through this [link](#).

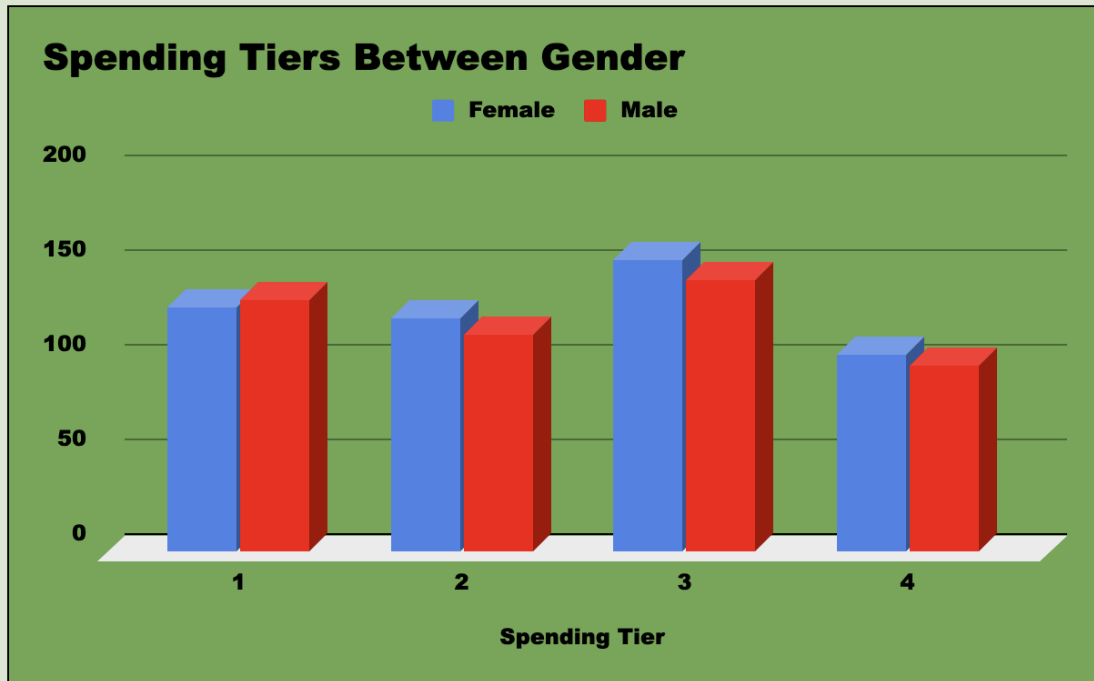
Data Analysis and Visualisation with Sheets

I analysed and visualised the following :

1. Count of customers by Spending Tier
2. Average Total Amount by Product Category
3. Product Category distribution per Gender
4. Total Spending by Age Group and Gender
5. Number of Premium Buyers per Product Category

[Link](#) to the sheet

Insights

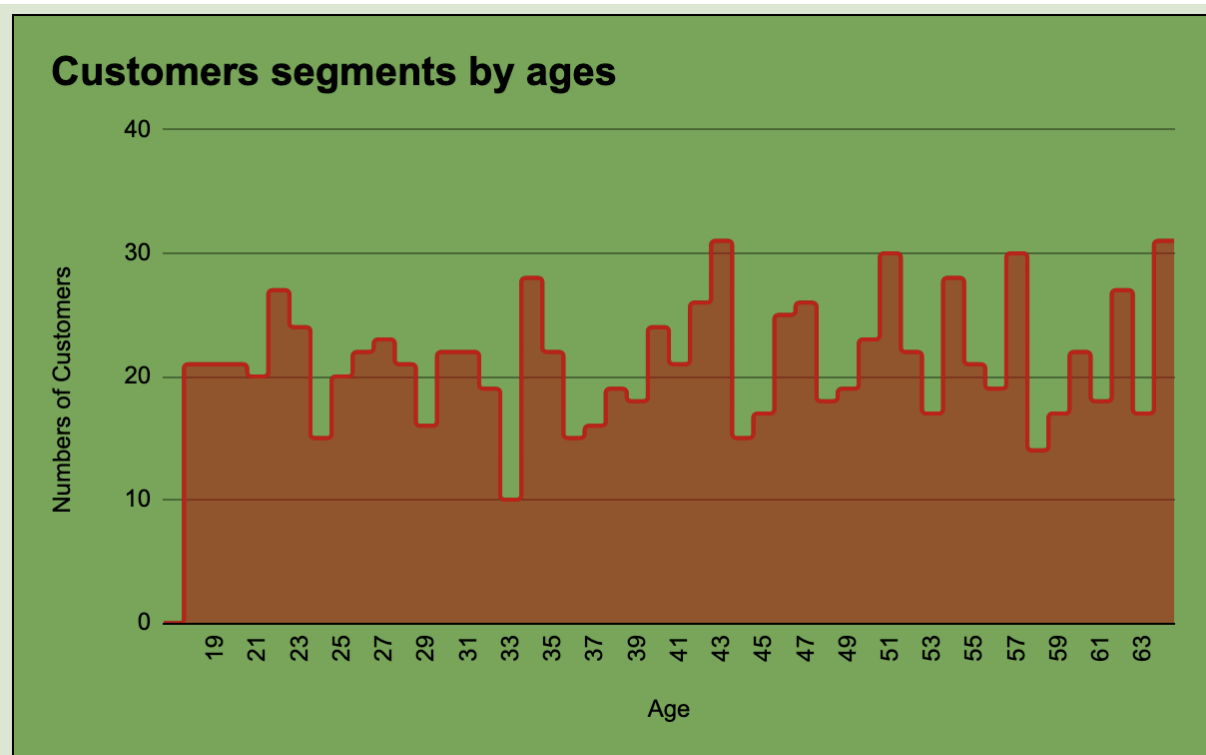


The majority of the customers are tier 3 customers. Female customers are spending more compared to male customers by referring tier 3 customers. Above 150 out of 1000 customers are female, and all of them are Tier 3 customers.

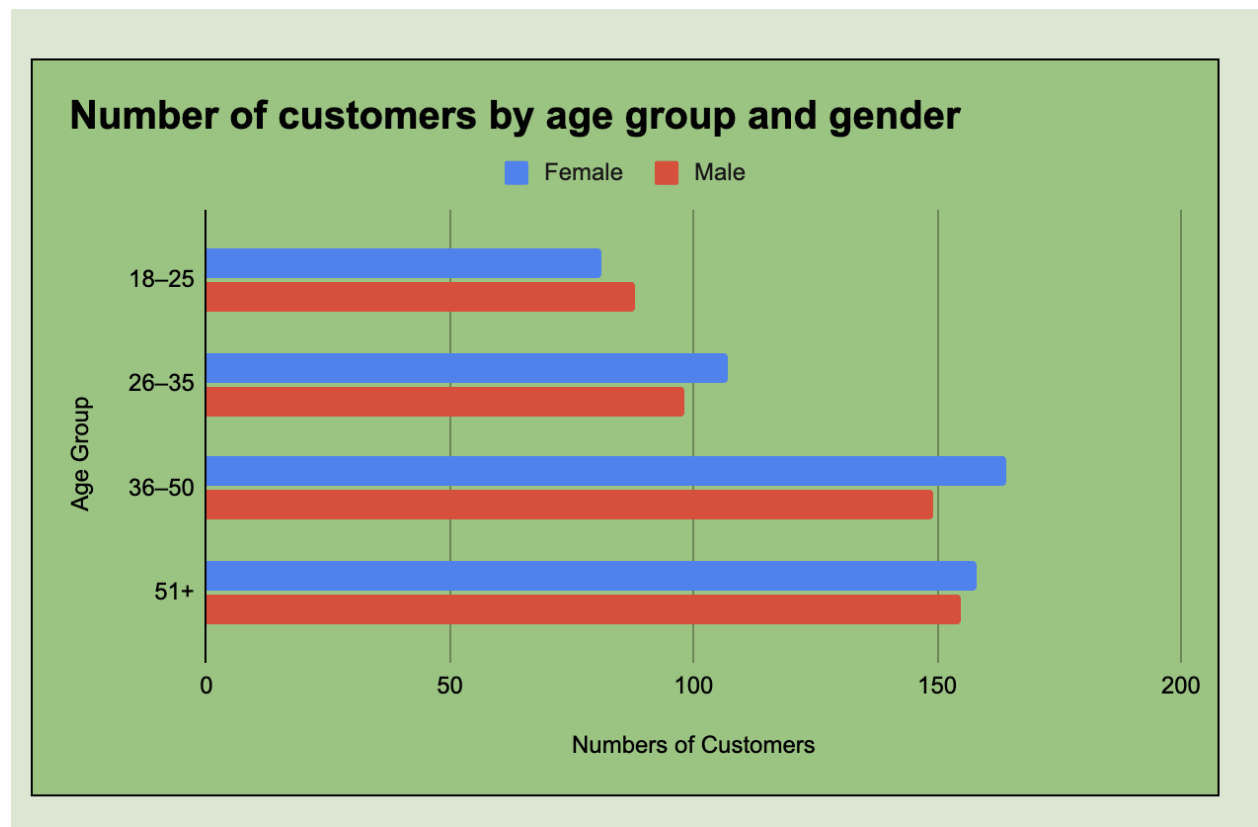
Total Sales by age Group and Gender

Age Group	Male	Female
18–25	\$45,080.00	\$39,470.00
26–35	\$43,365.00	\$55,115.00
36–50	\$68,870.00	\$70,790.00
51+	\$65,845.00	\$67,465.00
Grand Total	\$223,160.00	\$232,840.00

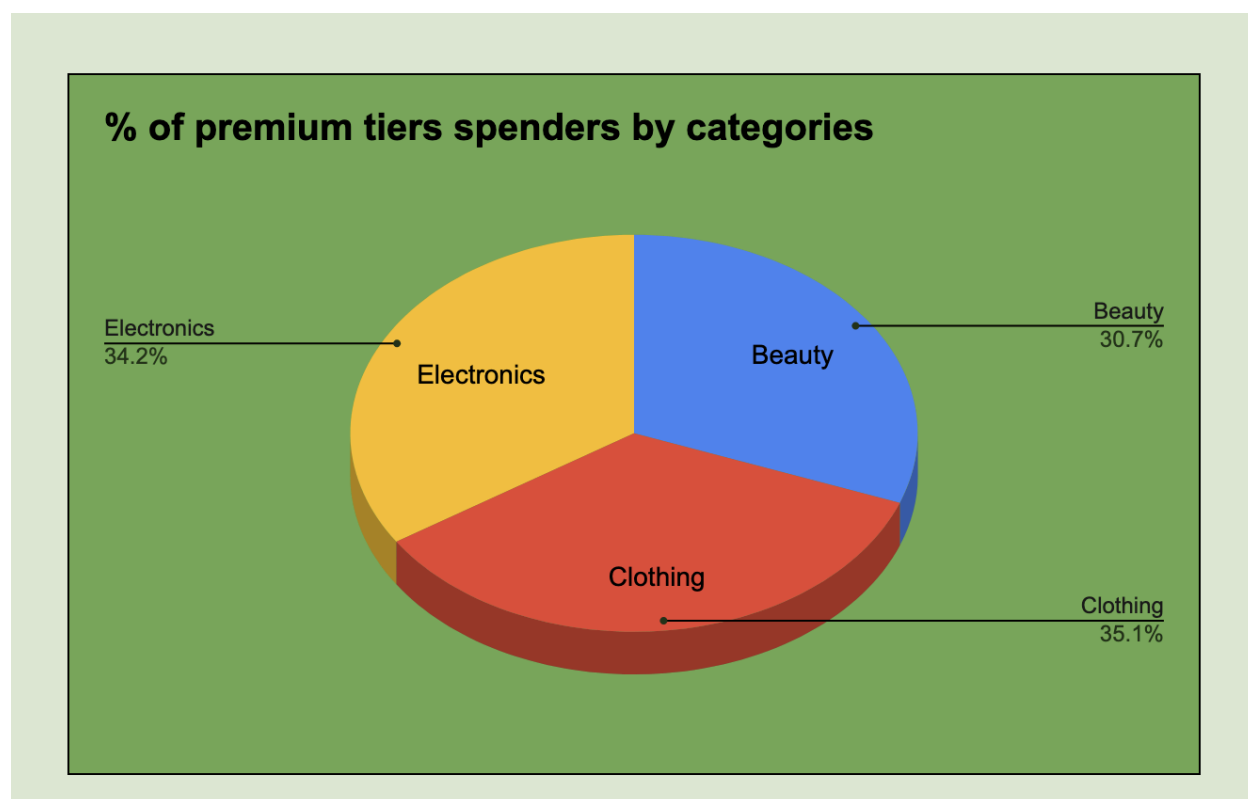
This Heatmap describe sales within the customer group, categorised by gender and age group. As we can see here, females aged between 35-50 are the customer group who buy from the shop the most. If the shop is using a pull strategy, they might need to target this customer group.



This graph represents the customers by age, We can see that those aged between 41 and 43, and above 63, are the majority of customers without concerning how much they spend.



This bar chart describe the number of customer by age group and gender , it can provide more broad insight with the age group . We can see that Female between 36 and 50 year old customer most buy from the store.



Premium customers are the customers who spend the most money among the shoppers. This Pie chart shows that most of the premium customers come from clothing categories, which taken 35.1% of the total premium customers.

Heatmap for number of customer with product categories by gender and age group

Age Group	Electronics		Clothing		Beauty	
	Male	Female	Male	Female	Male	Female
18–25	29	29	31	20	28	32
26–35	26	38	41	33	31	36
36–50	55	53	51	62	43	49
51+	62	50	54	59	39	49

This heatmap can tell us what customers buy what product the most . It does mean how much they spend on the product , and it mean how many of customer buy the product the most. Male 51+ and Femalem(36-50) are the customer who visit to the store the most by buying electronic and clothing respectively.

Heatmap representing total spending by age group and Gender

Age Group	Electronics		Clothing		Beauty	
	Male	Female	Male	Female	Male	Female
18–25	\$12,550.00	\$14,210.00	\$14,685.00	\$11,825.00	\$17,845.00	\$13,435.00
26–35	\$10,220.00	\$17,045.00	\$20,655.00	\$19,320.00	\$12,490.00	\$18,750.00
36–50	\$26,365.00	\$21,210.00	\$17,630.00	\$25,345.00	\$24,875.00	\$24,235.00
51+	\$31,035.00	\$24,270.00	\$21,335.00	\$24,785.00	\$13,475.00	\$18,410.00

The heatmap describe that most of 51+ male customers spend on buying electronic.

Key Insights from the data

1. Customer Tier:

- Majority of the customers are **Tier 3**, with **female Tier 3 customers spending more** than males.
- Over **150 out of 1000 customers are female Tier 3** — a significant segment.

2. Gender & Age-Based Purchasing:

- Females aged 35–50** are the **most active buyers** overall.
- Males aged 51+** buy mostly **electronics**, while **females aged 36–50** prefer **clothing**.

3. Customer Volume vs. Spending:

- Highest **customer volume**: ages **41–43** and **63+**, regardless of spending.
- Premium customers** (high spenders) prefer **clothing**, making up **35.1%** of that group.

Recommendations

1. Targeted Promotions by Age & Gender

Action:

Run **segmented ad campaigns** targeting:

- **Females aged 35–50** with promotions on clothing (both online and in-store)
- **Males aged 51+** with offers on electronics

Why:

These are the most active and highest-spending customer groups per your heatmap analysis.

2. Loyalty Program for Tier 3 Female Customers

Action:

Create a **Tier 3 loyalty reward system** focused on female shoppers to retain and encourage frequent buying.

Why:

Female Tier 3 customers not only dominate the segment but also spend more.

3. Premium Upselling in Clothing

Action:

Launch a **premium membership program** for frequent clothing buyers with exclusive early access or discounts.

Why:

35.1% of premium customers shop from clothing — upsell value-add services to increase retention.

4. Pull Strategy Optimization

Action:

If using a **pull strategy**, emphasize storytelling and influencer marketing targeting:

- Women aged 35–50

- Emotional appeal based on fashion, practicality, or status for clothing

Why:

This aligns with the purchasing behavior observed in heatmaps and pie charts.

5. Age-Based Re-Engagement Campaigns

Action:

Send reactivation emails and personalized offers to:

- Customers aged 41–43 (likely repeat buyers)
- Customers aged 63+ (volume high, but maybe under-monetized)

Why:

These groups have **high footfall but unclear spend** — push personalized or budget-friendly bundles.

6. Merchandising Strategy by Demographics

Action:

In-store layout:

- Front-load clothing sections with signage targeted at women aged 35–50
- Place electronics in easily accessible areas for men aged 51+

Why:

Reinforces buying patterns and makes shopping more intuitive for high-value customers.