

# **EXPLORATORY DATA ANALYSIS OF RETAIL SALES DATA**

Excel-Based Data Analysis Project

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# PROJECT OVERVIEW

## Purpose of the project

- To explore customer purchasing behavior using sales transaction data
- To identify patterns in spending across demographics and product categories

## Tools Used:

- Microsoft Excel (Data Cleaning, Pivot Tables, Charts)

# DATASET DESCRIPTION

- Customer demographics (Age, Gender)
- Product categories
- Purchase amount (RM)
- Transaction dates

Original Records: ~200+ transactions

# DATA CLEANING PROCESS

## Steps performed:

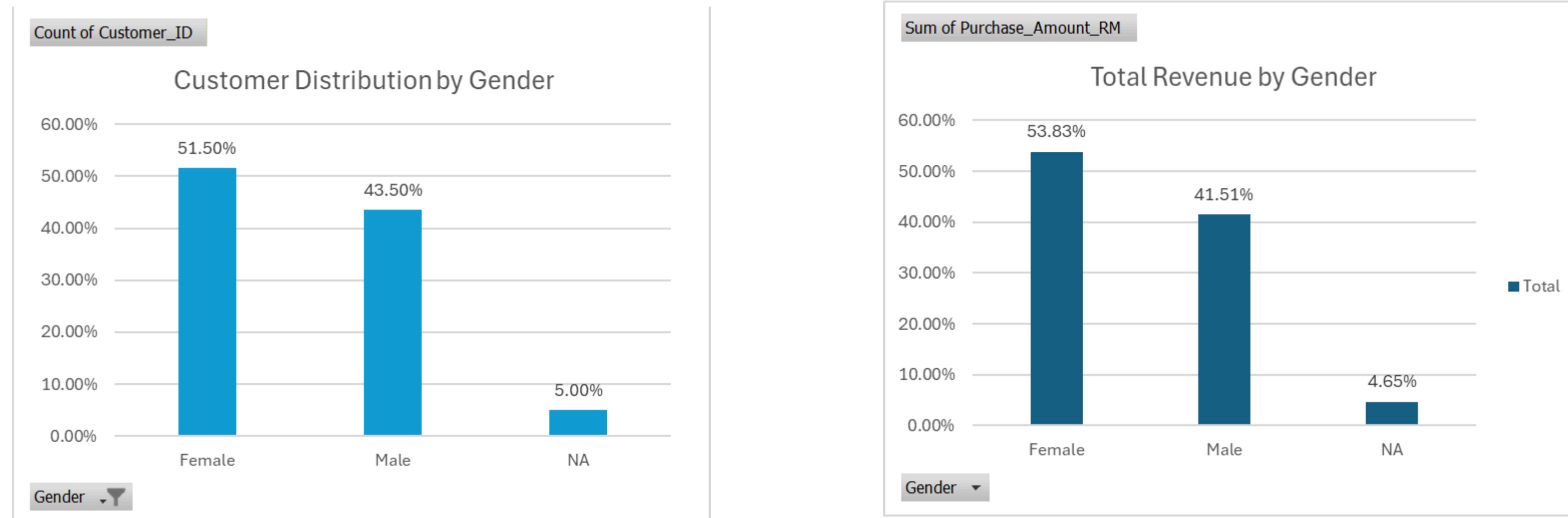
1. Identified and handled missing values (median for numerical, NA for categorical)
2. Removed duplicate records
3. Created derived features (Age Groups, Purchase Bands)

# DESCRIPTIVE STATISTICS

- The dataset contains 200 complete transaction records, which is sufficient for identifying customer and sales patterns.
- The average customer age is approximately 29 years, with a median age of 28, indicating a relatively young customer base. Ages range from 18 to 45.
- The average purchase amount is RM137, while the median is RM100, suggesting that although most purchases are lower to mid-range, there are some higher-value transactions up to RM500.

Statistic	Age	Purchase_Amount_RM
Count	200	200
Mean	29.195	137
Median	28	100
Min	18	50
Max	45	500

# GENDER ANALYSIS



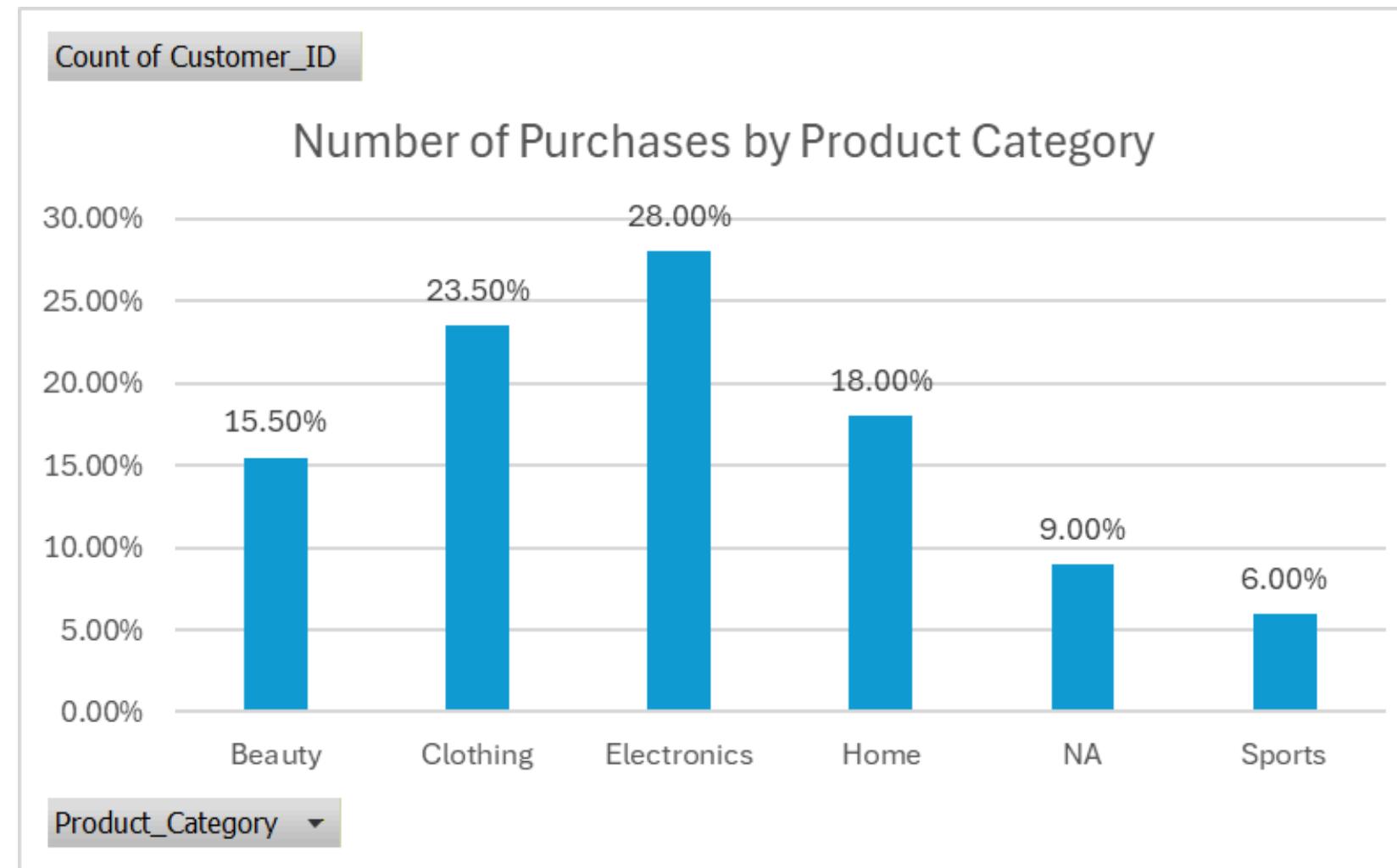
## Insight:

Female customers represent the largest proportion of the dataset, while a small percentage of transactions have unspecified gender information.

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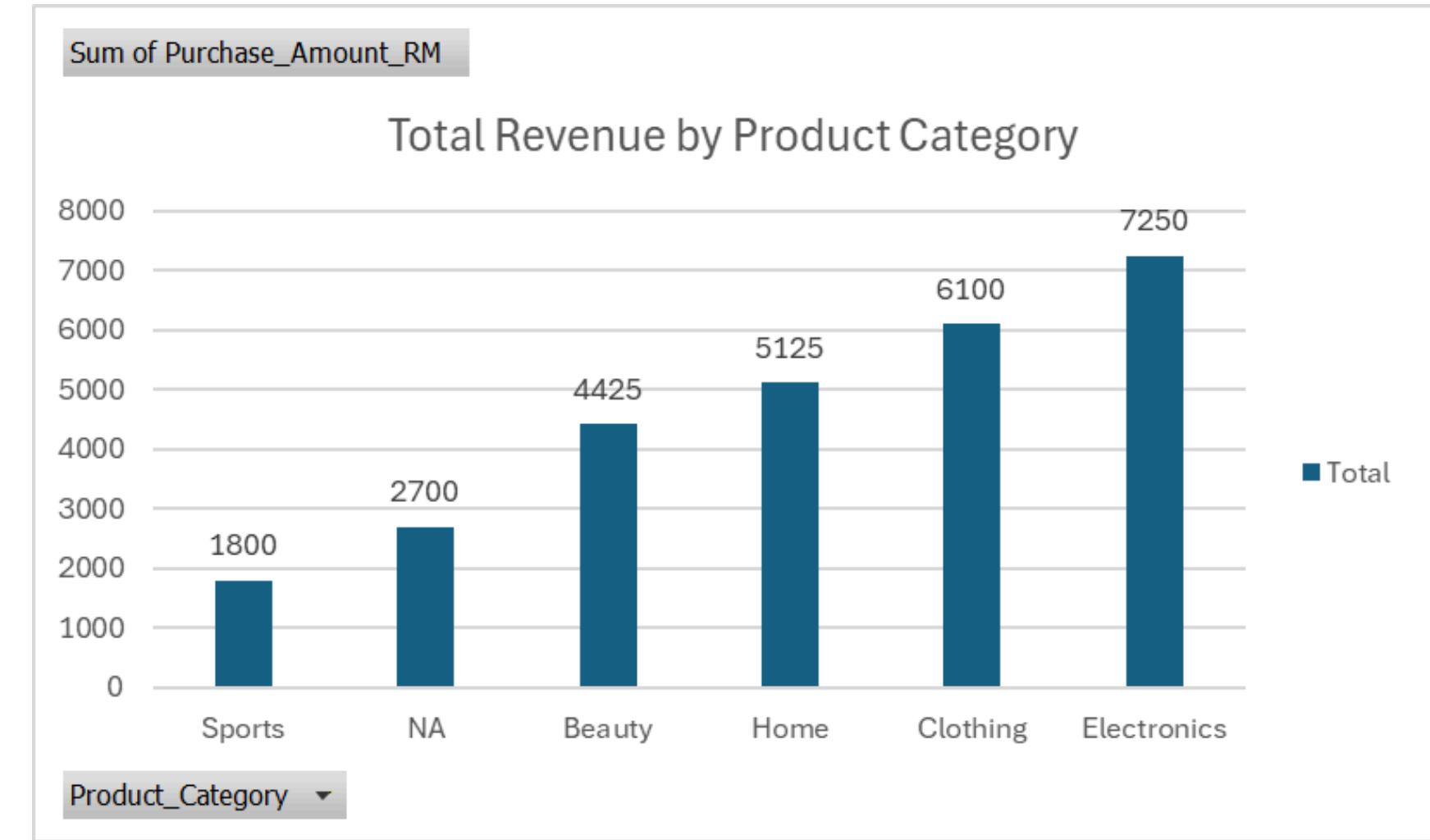
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# PRODUCT CATEGORY ANALYSIS



## Insight:

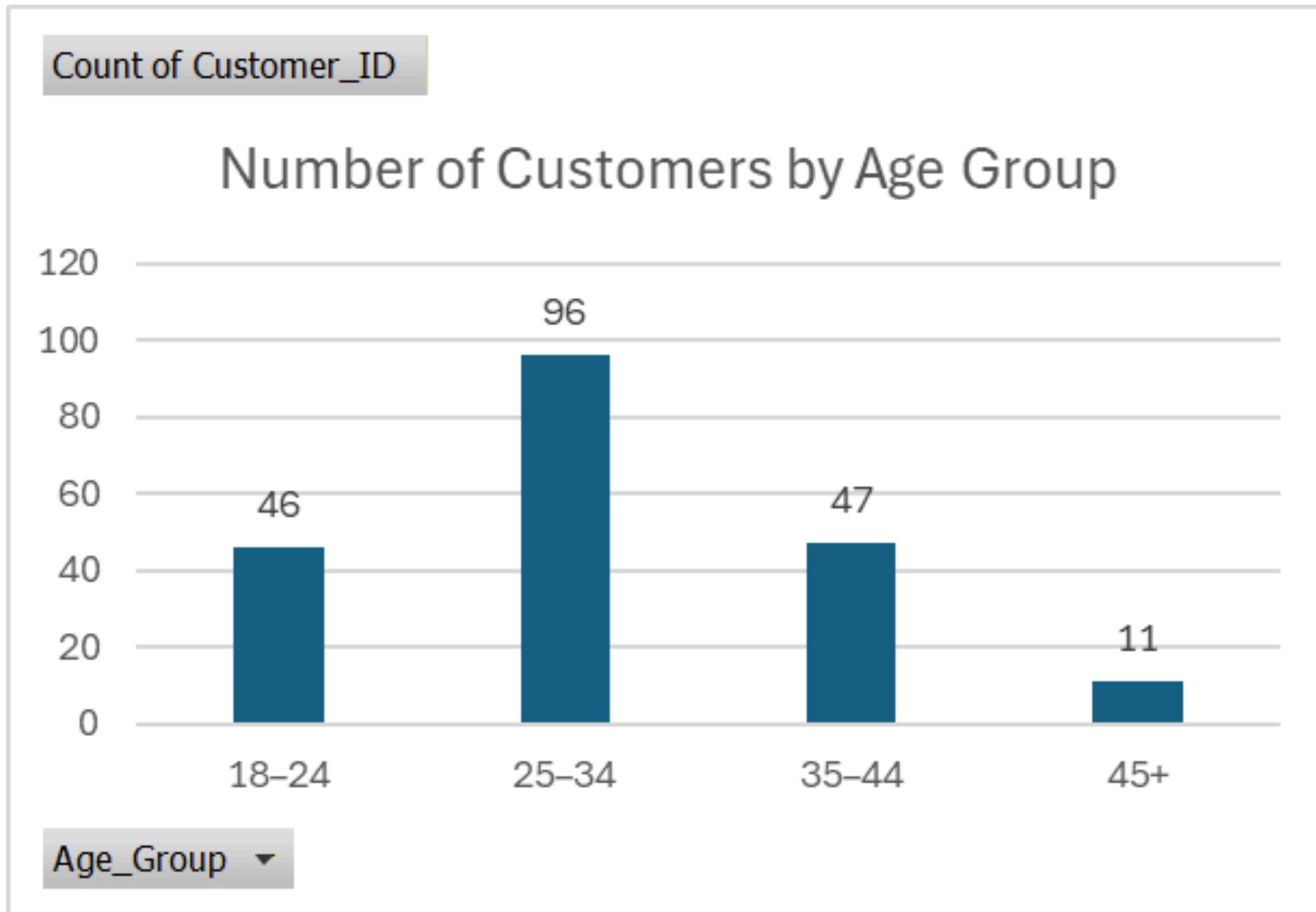
Electronics is the most frequently purchased product category, indicating strong customer demand in this segment.



## Insight:

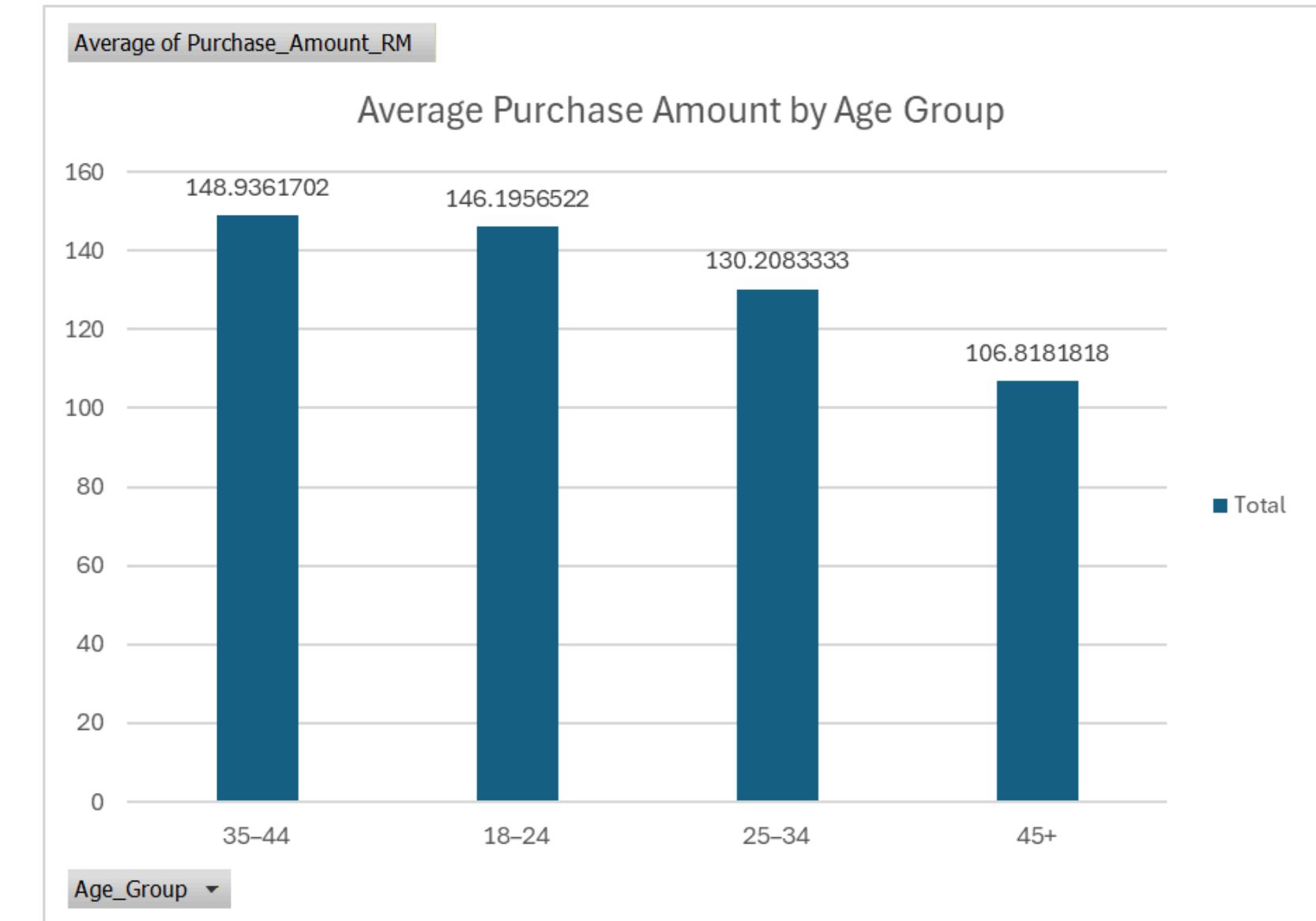
Electronics contributes the highest share of total revenue, making it the primary revenue driver compared to other product categories.

# AGE GROUP ANALYSIS



## Insight:

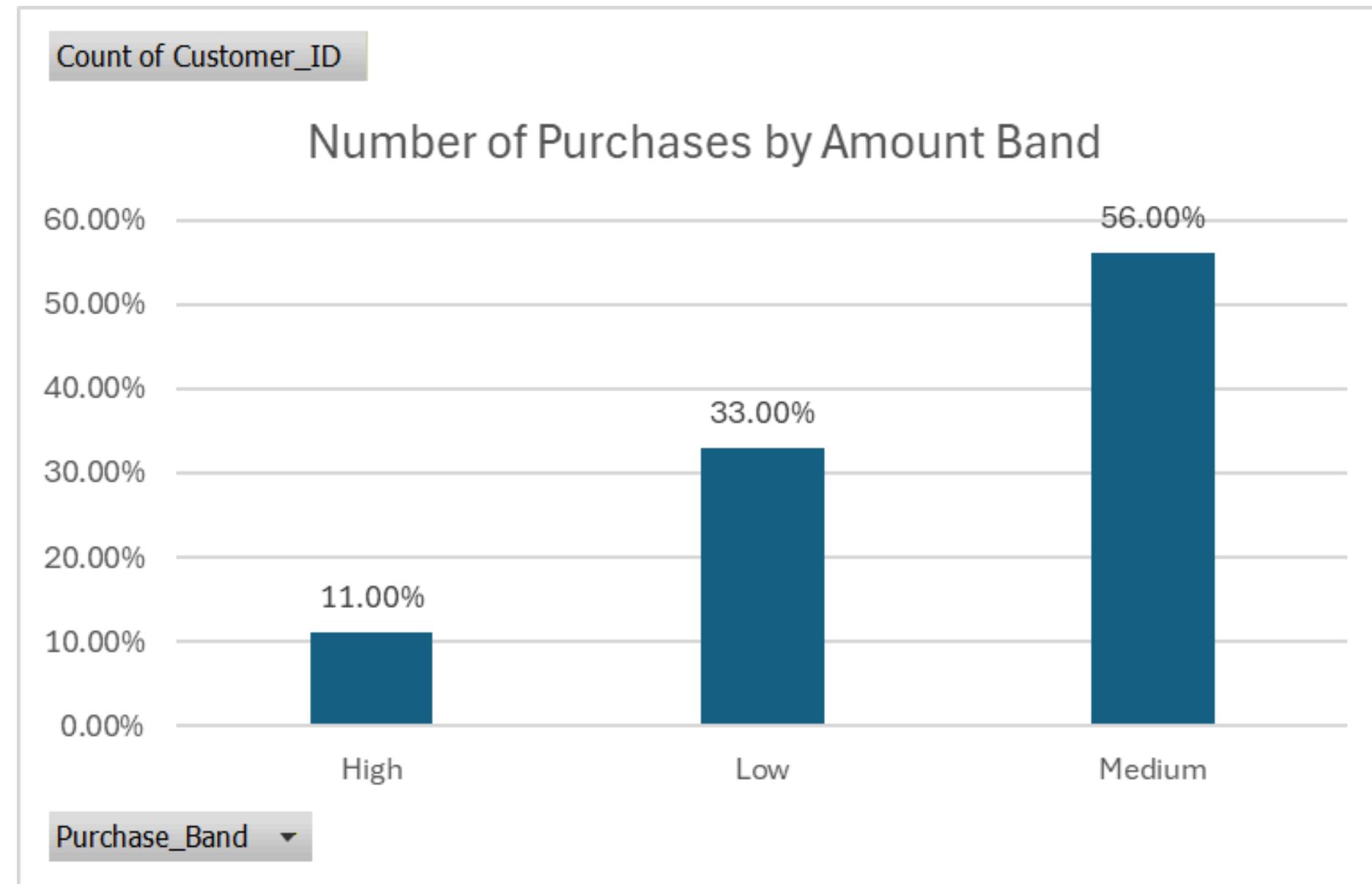
Customers aged 25–34 make up the largest customer segment, this group represents a key target for customer acquisition and engagement strategies.



## Insight:

Customers aged 35–44 have the highest average purchase amount, indicating stronger spending power within this age group.

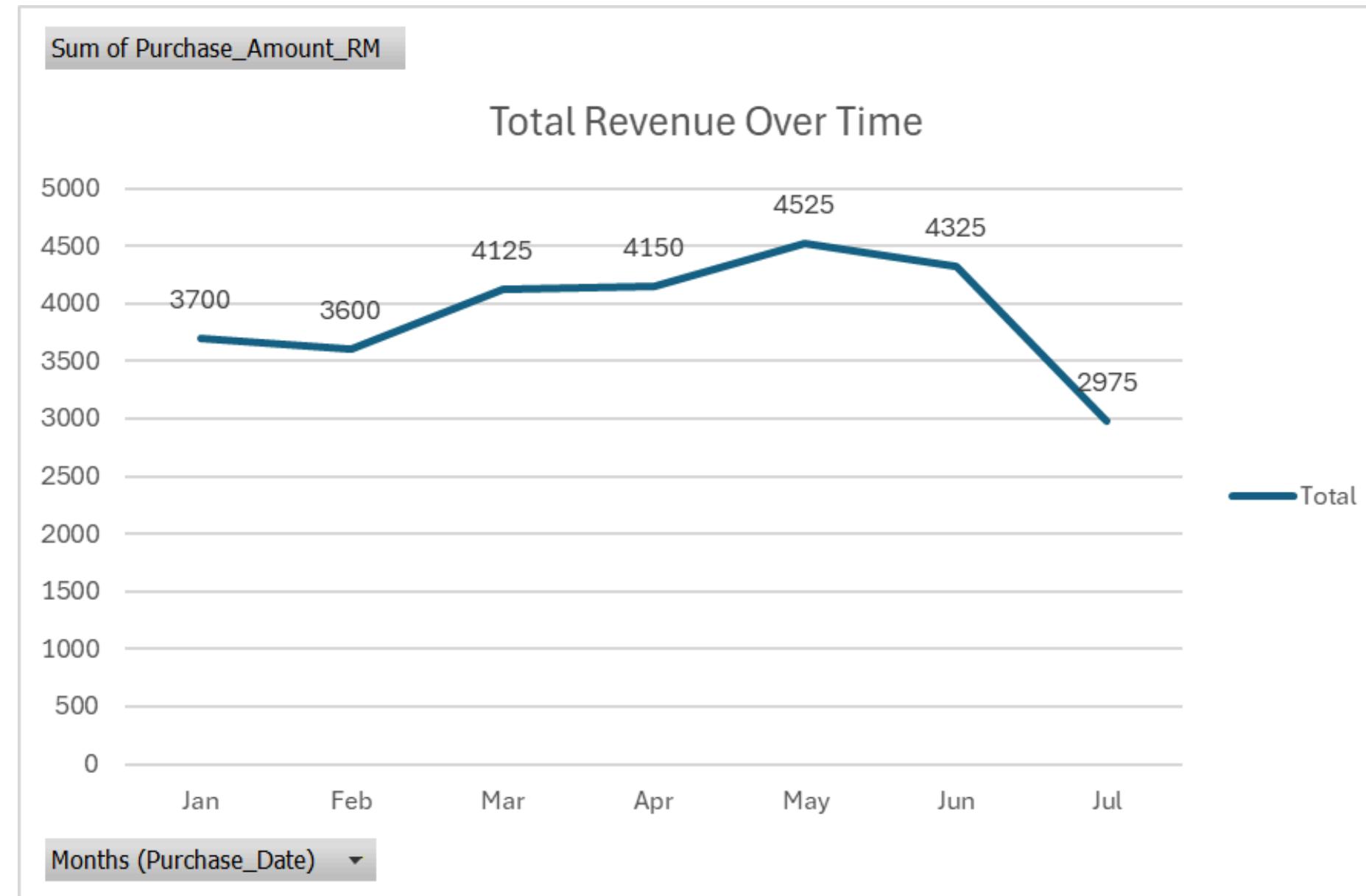
# PURCHASE BAND ANALYSIS



## Insight:

Medium-value purchases account for 56% of total transactions, indicating a strong customer preference for mid-range priced products.

# MONTHLY SALES TREND



## Insight:

Monthly sales show noticeable fluctuations, suggesting the presence of seasonal purchasing patterns rather than consistent sales throughout the year.

# KEY BUSINESS INSIGHTS

## Which product category generates the highest revenue?

Electronics generates the highest total revenue, making it the primary revenue-driving product category.

## Do older customers spend more than younger ones?

Yes. While customers aged 25–34 represent the largest customer group, customers aged 35–44 have the highest average purchase amount, indicating stronger spending power.

## How does purchase amount differ by gender?

Purchase behavior varies by gender, with female customers contributing the largest share of total revenue.

## Are there seasonal trends in sales?

Monthly sales fluctuate over time, suggesting the presence of seasonal purchasing patterns rather than consistent sales across all months.

## **CONCLUSION:**

Overall, the analysis highlights clear customer segments, key revenue drivers, and spending trends that can support targeted marketing and pricing strategies.