Amazon Sales : Price & Rating Analysis

Detailed Project Report

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PROJECT DETAIL

Project Title	**Amazon Sales : Price & Ratings Analysis**
Technology	Business Intelligence
Domain	E-commerce
Project Difficulty Level	Advanced
Programming Language Used	Python
Tools Used	Jupyter Notebook, MS-Excel, MS-Power BI

OBJECTIVE

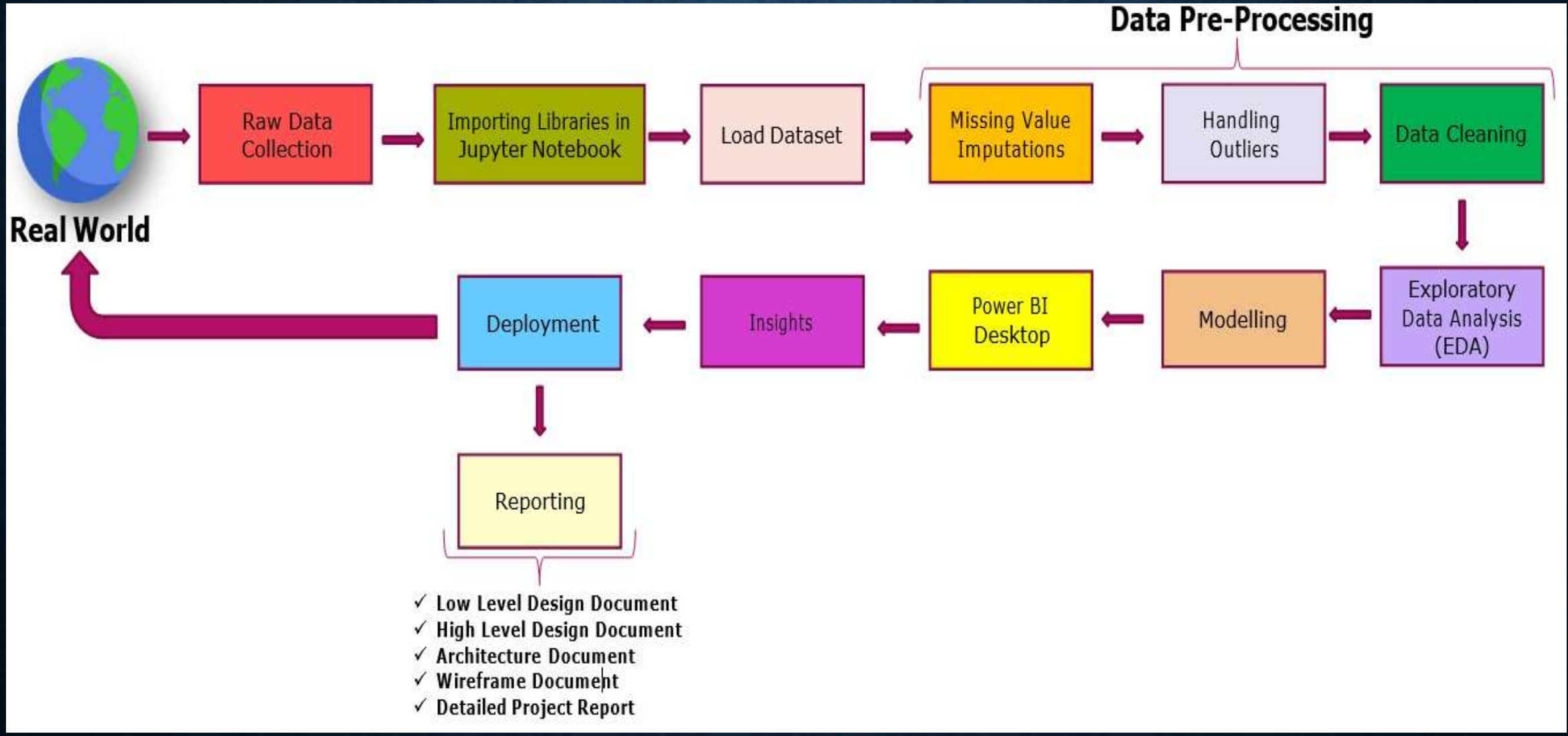
The objective of this project is to analyze Amazon's sales data, focusing on pricing, ratings, and product categories, the goal is to identify trends that help optimize revenue, enhance customer satisfaction, and improve competitive positioning by understanding purchasing patterns, rating distributions, and pricing strategies across various categories.

PROBLEM STATEMENT

- Amazon product prices and ratings are vital indicators of customer satisfaction and market performance, serving as crucial factors for both consumers and sellers. Whether a customer is searching for an affordable tech gadget or a premium home appliance, understanding how prices and customer ratings correlate is essential for informed purchasing decisions. However, it's not just the discounts or product features that influence these outcomes—customer preferences, brand reputation, and category-specific trends all play significant roles.

- Accurately analyzing and predicting product performance across price ranges and rating metrics can be complex. Buyers are often influenced by more than just the product's category or appearance; they consider factors like customer reviews, price drops, and the overall value for money. The diverse range of products on Amazon—spanning electronics, home essentials, and fashion—creates a dynamic market where consumer behavior varies widely depending on the product category and price segment.

ARCHITECTURE



DATASET COLUMN DETAILS

- **product_id:** Unique identifier for each product.
- **product_name:** Name or description of the product.
- **discounted_price:** The price of the product after discount has been applied.
- **actual_price:** The original price of the product before any discounts.
- **discount_percentage:** The percentage discount applied to the product.
- **rating:** The average customer rating for the product (usually out of 5).
- **rating_count:** The total number of ratings or reviews the product has received.
- **about_product:** Detailed information or description about the product.

- **user_id:** Unique identifier for the user providing the review or rating.
- **user_name:** Name of the user who provided the review or rating.
- **review_id:** Unique identifier for each review.
- **review_title:** Title or brief summary of the review.
- **categories**: This column defines the broad category to which a product belongs. Each product falls under a single main category, which helps in identifying the general type of product sold.(main category are: Electronics, Home & Kitchen, Office Products, Toys & Games, Computers & Accessories, Car & Motorbike and Other)
- **Discounted Price**: This represents the current selling price of a product after applying any discounts. Understanding the discounted price is crucial for analyzing sales strategies, customer attraction, and competitive pricing.

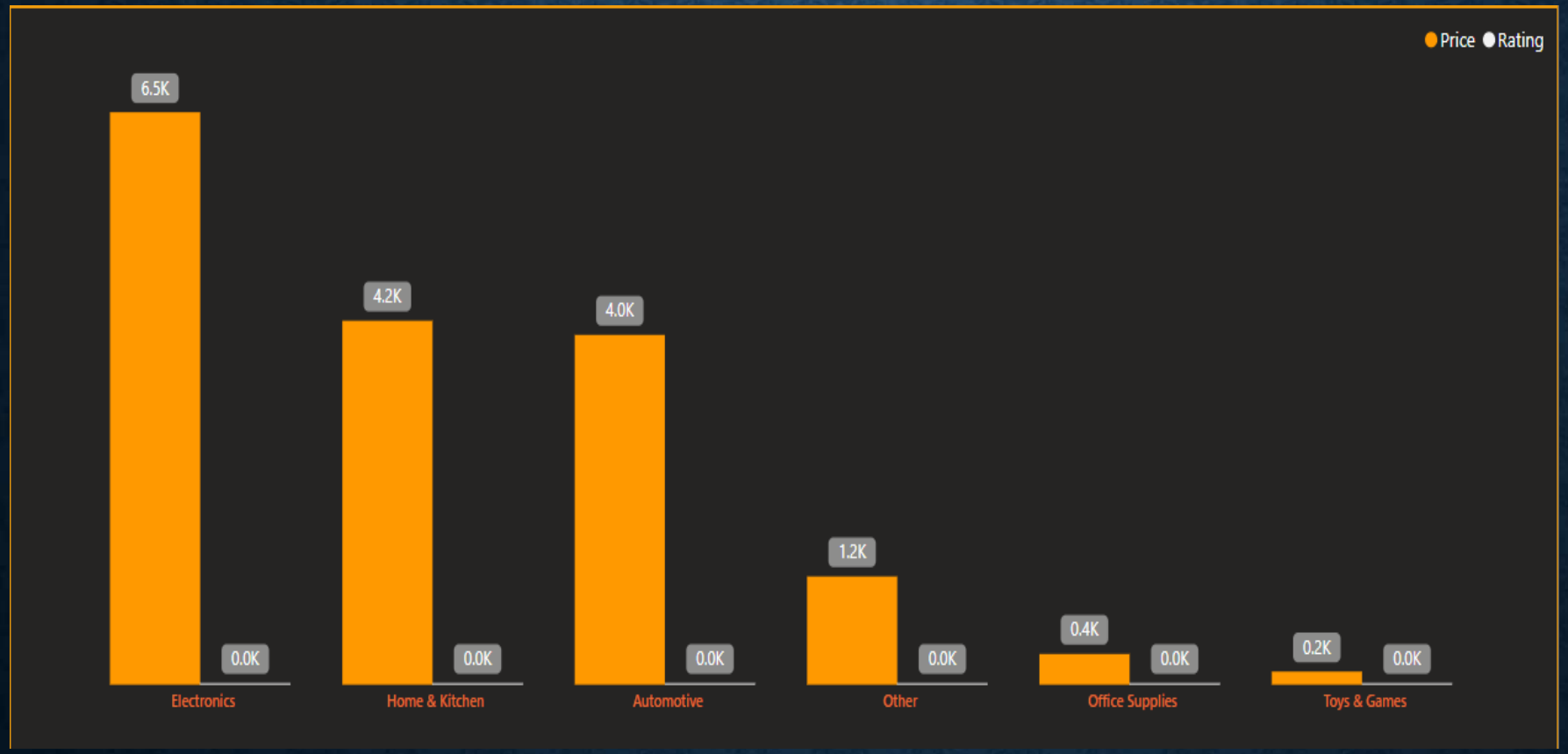
- **Rating**: This is the average user rating of the product, typically on a scale from 1 to 5. Ratings are essential for assessing product quality, customer satisfaction, and identifying areas for improvement.

- **Actual Price**: This is the original price of the product before any discounts are applied. Analyzing the actual price helps in understanding the discount strategies and the perceived value of the product.

- Category: The analysis shows that the "Electronics" category has a high count of 526, indicating a significant presence in the dataset, while "Toys & Games" and "Automotive" categories have a count of 0, suggesting they are not represented in this dataset. This highlights the dominance of electronics and the absence of toys & games and automotive products in the data.

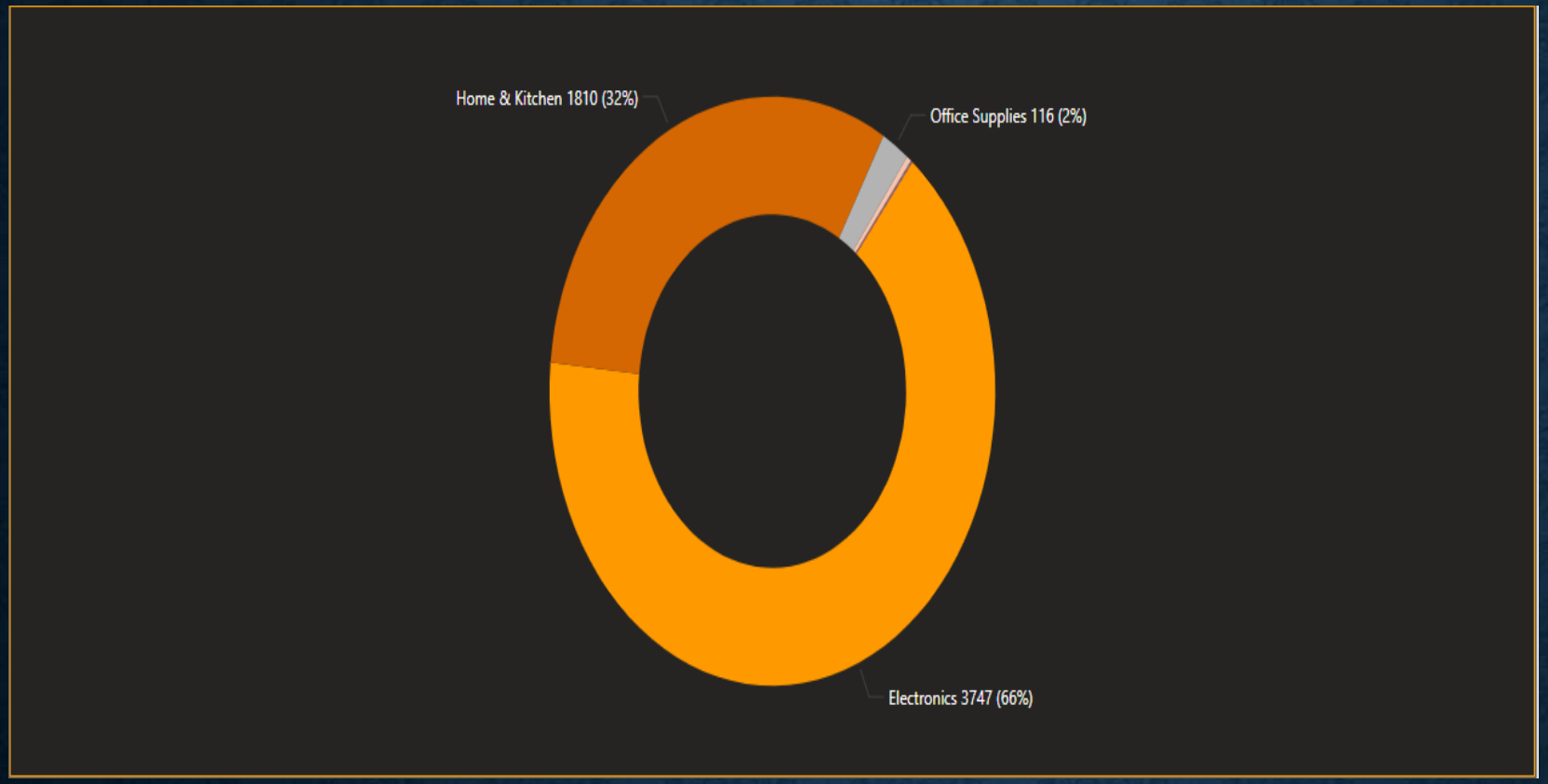
INSIGHTS FROM THE DATASET

1. Which product category has the highest average rating?



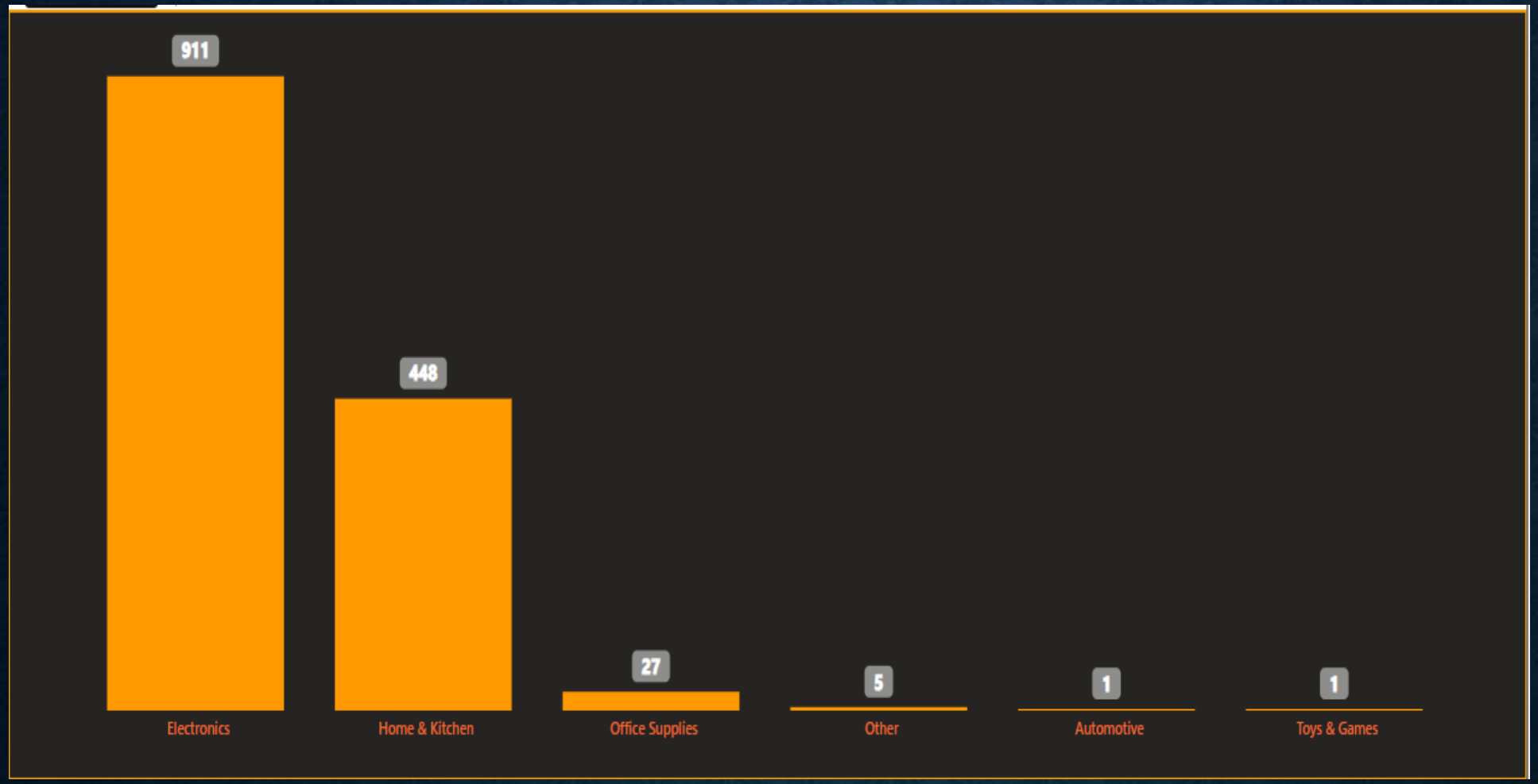
- Electronics has the highest average rating at 6.5k.

2. How do cumulative ratings differ across product categories?



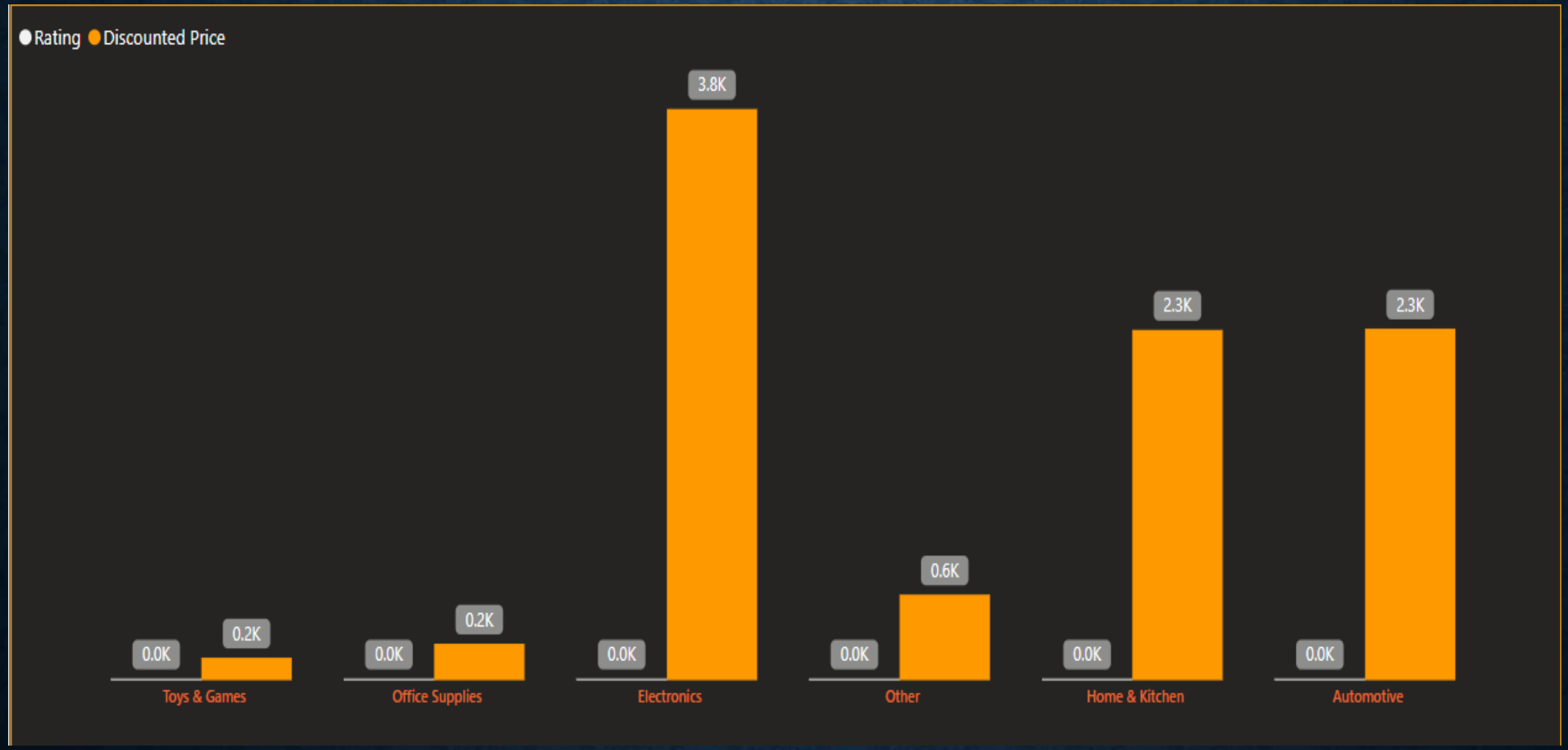
- The **Electronics** category leads with 3,747 total ratings, while **Automotive** and **Toys & Games** have only 4 ratings each, showing a significant difference in cumulative ratings across categories.

3. How does the total product count vary across different price ranges?



- Most purchases occur in the **0-1000** and **1000-5000** price ranges, primarily within the **Electronics** and **Home and Kitchen** categories.

4. How do the average ratings compare to the discounted prices across different product categories?



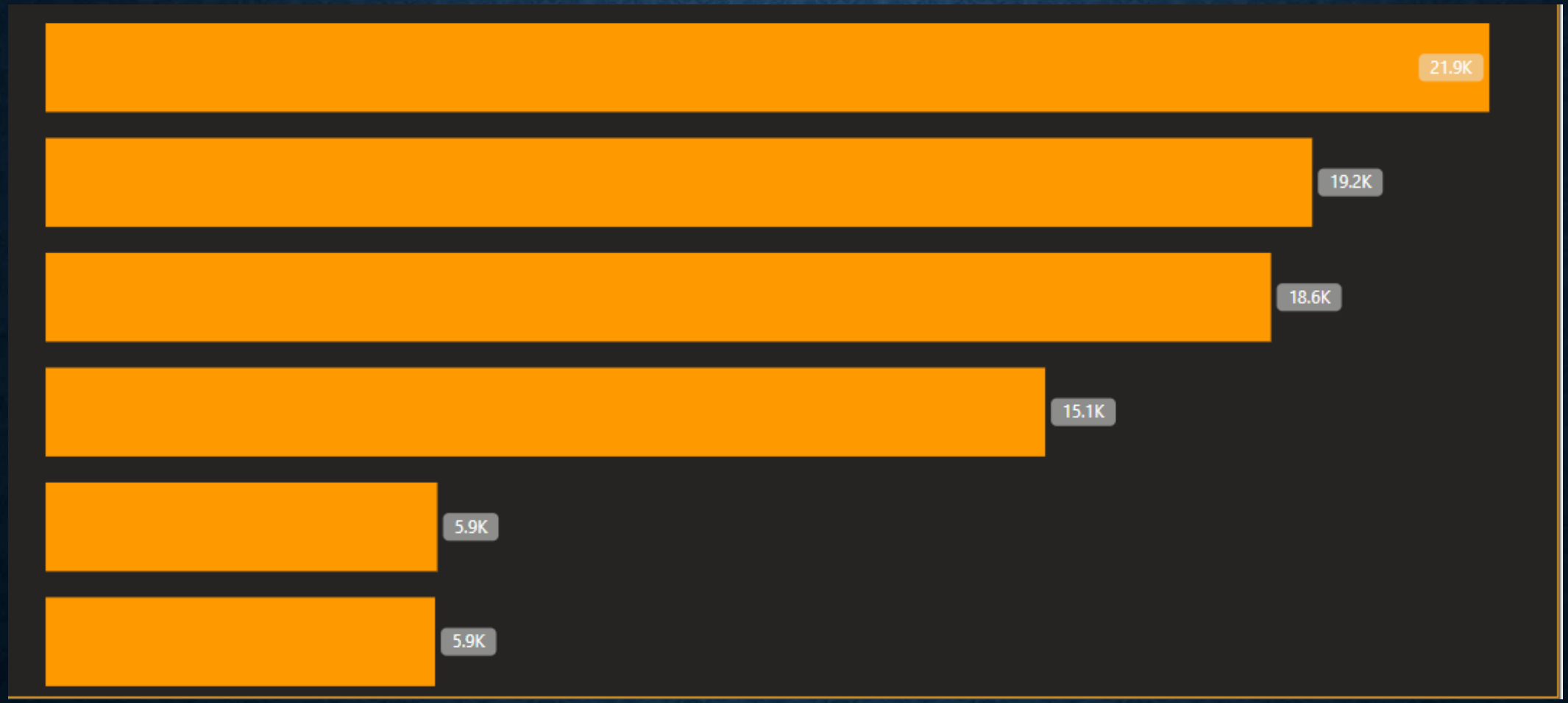
- **Electronics** has the highest average rating of **5** at **2.94k**, while **Home and Kitchen** has a rating of **2** at **2.4k**.

5. Which category has the highest average price?

Categories	Average_Rating	AveragePrice	Product_Count
Automotive	3.80	2,339.00	1
Home & Kitchen	4.04	2,330.62	448
Other	4.06	569.80	5
Electronics	4.11	3,800.15	911
Office Supplies	4.29	242.85	27
Toys & Games	4.30	150.00	1

- The automotive category has the highest average price compared to other categories at 2,339.

6. How do average ratings vary across different price ranges?



- Average ratings rise with higher price ranges, peaking in the 10,000 to 50,000 range, with electronics at 21.9k and home & kitchen at 19.2k, suggesting a link between price and quality perception.

THANK YOU