


The Amazon logo, featuring a stylized lowercase 'a' in dark blue with an orange arrow underneath it, pointing from the 'a' to the right.

# Sales & Customer Analytics for **Amazon** Marketplace

Tools: SQL • Power BI  
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# ABOUT

## Amazon Marketplace



Amazon is one of the largest e-commerce platforms in India, offering millions of products across electronics, fashion, home goods, and more.

It operates on a high-volume, high-competition model where pricing, customer reviews, and product visibility heavily influence sales.

Customers can browse products, compare prices, leave reviews, and make repeat purchases, creating a large volume of behavioral and transactional data.

# PROBLEM STATEMENT

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In a dynamic e-commerce environment like Amazon, understanding how pricing, product performance, and customer engagement impact business success is essential for stakeholders.

These factors drive strategic decisions across marketing, inventory, and revenue planning.

This project aims to investigate patterns in product sales, discount effectiveness, and user behavior using real and simulated retail data.

Success metrics include: total revenue, units sold, discount efficiency, average customer rating, and engagement frequency.

# RESEARCH OBJECTIVES

THIS STUDY EXPLORES BUSINESS PATTERNS IN SALES, PRICING, AND USER BEHAVIOR USING SQL AND POWER BI.

## 1 Product Performance



- Identify top products & categories by revenue
- Explore rating impact on sales

## 2 Pricing & Discounts



- Detect products with high discounts but low sales
- Analyze discount effectiveness on conversions


## 3 Customer Behavior



- Discover most engaged users via reviews
- Segment insights for dashboard & decision-making



# HYPOTHESIS

- 1 HIGHER-RATED PRODUCTS TEND TO GENERATE MORE UNIT SALES
  - 2 HEAVILY DISCOUNTED PRODUCTS DO NOT ALWAYS PERFORM BETTER
  - 3 A SMALL GROUP OF USERS ACCOUNTS FOR THE MAJORITY OF REVIEWS
  - 4 A FEW PRODUCT CATEGORIES DOMINATE OVERALL REVENUE
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# DATA OVERVIEW

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- This project uses a dataset called “**Amazon**”, sourced from Kaggle, which includes product names, pricing, categories, discounts, customer ratings, and review details
- From that raw table, I created two structured tables, one focused on product-level details, and one capturing user reviews and customer sentiment
- To enable deeper, business-relevant analysis, I also built a synthetic orders table that includes order\_id, order\_date, and units\_sold
- The original dataset didn’t include transaction data, but business metrics like revenue trends, sales performance, and buying behavior depend on it, so I designed the missing structure to make the analysis complete

# ANALYSIS AND FINDINGS

## Which products generate the highest total revenue for Amazon?

- The analysis involved calculating revenue by joining the products and orders tables, using the formula:  
 $\text{units\_sold} \times \text{discounted\_price}$
- All of the top 5 revenue-generating products came from the Electronics category, showing a clear dominance of this segment in total revenue share.

product_name	category	total_units_sold	total_revenue_million
Redmi Note 11 (Horizon Blue, 6GB RAM, 64GB S...	Electronics	7989	103.85
Redmi 126 cm (50 inches) 4K Ultra HD Android S...	Electronics	3092	102.03
Redmi 9A Sport (Carbon Black, 2GB RAM, 32GB ...	Electronics	14287	92.85
Redmi 108 cm (43 inches) 4K Ultra HD Android S...	Electronics	3343	90.26
MI 108 cm (43 inches) 5A Series Full HD Smart A...	Electronics	2983	74.57

## Do higher-rated products sell more on Amazon?

- The dataset was evaluated for patterns between product ratings and units sold. Products were grouped by product\_id and compared on two metrics: average rating and units\_sold.
- There is no consistent correlation between high rating and its sales volume. Several products with 4.8+ ratings had low sales, while some top-selling items were rated below 4.0, indicating that rating alone does not drive purchasing behavior.

### Top-rated product with low-selling

product_id	rating	total_units_sold
B09ZHCJDP1	5	1
B0BP7XLX48	5	1
B0BQRJ3C47	5	0
B0B53DS4TF	4.8	345
B0BQ3K23Y1	4.8	2
B0BR4F878Q	4.8	5301
B09WN3SRC7	4.7	453
B0B23LW7NV	4.7	553
B0BLC2BYPX	4.7	3
B0BM4KTNL1	4.7	1

### Low-rated product with High-selling

product_id	rating	total_units_sold
B07GQD4K6L	4.1	36255
B014I8SX4Y	4.4	35197
B014I8SSD0	4.4	25811
B071Z8M4KX	4.1	22019
B07KSMBL2H	4.4	18857
B01DEWVZ2C	4.1	17374
B08HVJCW95	4.3	16471
B09GFM8CGS	4.1	14287
B07GPXXNNG	4.1	14003
B01DF26V7A	4.1	13827



## Are products with high discounts converting to higher sales?

- To test whether deep discounts lead to higher product sales, we filtered products offering more than 50% discount and analyzed their corresponding units\_sold. The dataset joined product and order data to surface underperformers despite aggressive pricing
- Several heavily discounted products (50%–70%) still recorded extremely low or zero sales. This reveals that aggressive price cuts are not enough to boost demand, especially when factors like visibility, or category interest aren't aligned.

product_name	category	discount_percent	total_units_sold	rating
LAPSTER 12pcs Spiral Cable Protectors for Char...	Electronics	90	7	4.4
Croma 3A Fast charge 1m Type-C to All Type-C ...	Computers&Accessories	87	2	3.9
SHREENOVA ID116 Plus Bluetooth Fitness Smar...	Electronics	86	9	2.8
Lapster 5 pin mini usb cable, usb b cable,camer...	Computers&Accessories	85	8	4
Electvision Remote Control for led Smart tv Com...	Electronics	83	9	3.8
Caldipree Silicone Case Cover Compatible for 20...	Electronics	82	1	4.3
Aqua d pure Active Copper 12-L RO+UV Water ...	Home&Kitchen	80	3	4.5

## Which users show the highest engagement based on review activity?

- To identify Amazon's most active users, we joined reviews and orders datasets and counted the number of reviews per user. Review count is used as a proxy for engagement, especially for repeat buyers or loyal customers.
- While overall review activity was modest, the top 5 users still showed consistently higher engagement, with up to 22 reviews each. These users can be tapped for gathering feedback on product experience or understanding loyal buyer behavior.

user_id	user_name	review_count
AE55KTFVNX YFD5FPYWP2OUPEYNPQ	Sethu madhav	22
AG5DWPD54QGSLWJ6QUFERLPNAX4Q	E.C.GEORGE	22
AEBWA5I4QFCA3P3OBEPMELBGN4GQ	Akash Thakur	20
AECPFYFQVRUWC3KGNLJIOREFP5LQ	ArdKn	20
AHMGAC6QM62UXNEOCZIHLSXPP2Q	Burger Planet	20

## Which categories generate the highest revenue per unit sold on Amazon?

- A Common Table Expression (CTE) was used to calculate total\_revenue and total\_units\_sold by category. A derived metric, Revenue per Unit Sold, was then computed to identify the most margin-efficient categories.
- Top-performing categories like Smart Devices and Electronics generated the highest revenue per unit, signaling strong pricing power and profitability.

category	total_revenue	revenue_per_unit
Electronics	2680483010	3777.21
Car&Motorbike	219866	2339
Home&Kitchen	301440451.63	2104.38
Computers&Accessories	270045568.45	919.25
Health&PersonalCare	315549	899

## Category-wise KPI view for decision-making

- This SQL view aggregates core business metrics at the category level, enabling quick visibility into sales performance across segments.
- Metrics Included:
  - Total Revenue
  - Total Units Sold
  - Average Rating
  - Average Discount %
  - Total orders

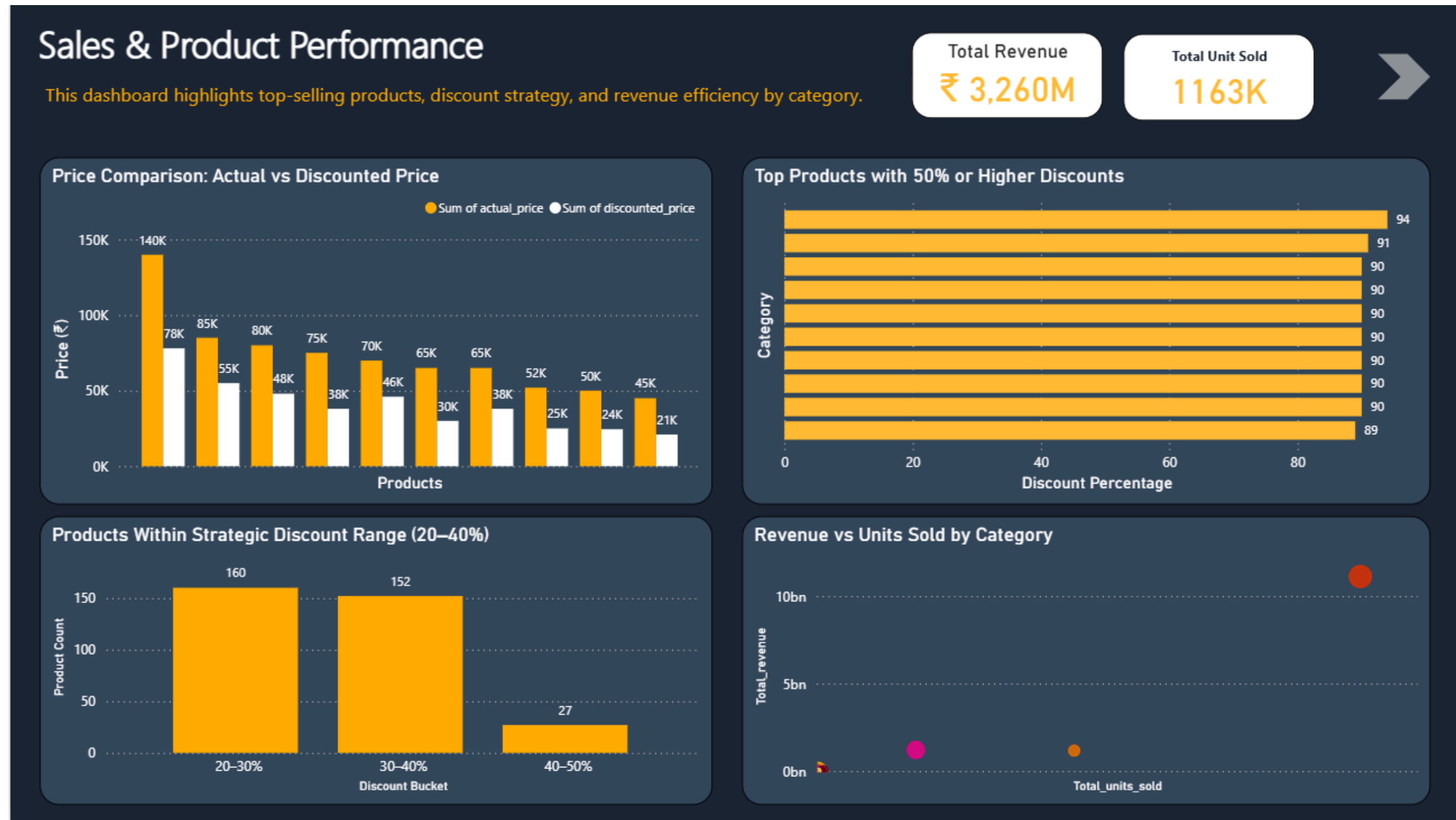
category	total_revenue_millions	units_sold	average_discount	average_rating	total_orders
Electronics	2680.48	709,646	0.5	4.08	490
Home&Kitchen	301.44	143,244	0.4	4.04	448
Computers&Accessories	270.05	293,768	0.53	4.15	375
MusicalInstruments	5.42	7,504	0.46	3.9	2
OfficeProducts	1.83	6,486	0.12	4.31	31
Health&PersonalCare	0.32	351	0.53	4	1
Car&Motorbike	0.22	94	0.42	3.8	1
HomeImprovement	0.22	740	0.57	4.25	2
Toys&Games	0.15	1,024	0	4.3	1

## Stored Procedure: GetTopProductsByRevenue()

- Encapsulated logic to retrieve top revenue-generating products
- The procedure simplifies repeated revenue analysis by returning the top N products based on total revenue.
- Execution: **CALL GetTopProductsByRevenue(5);**

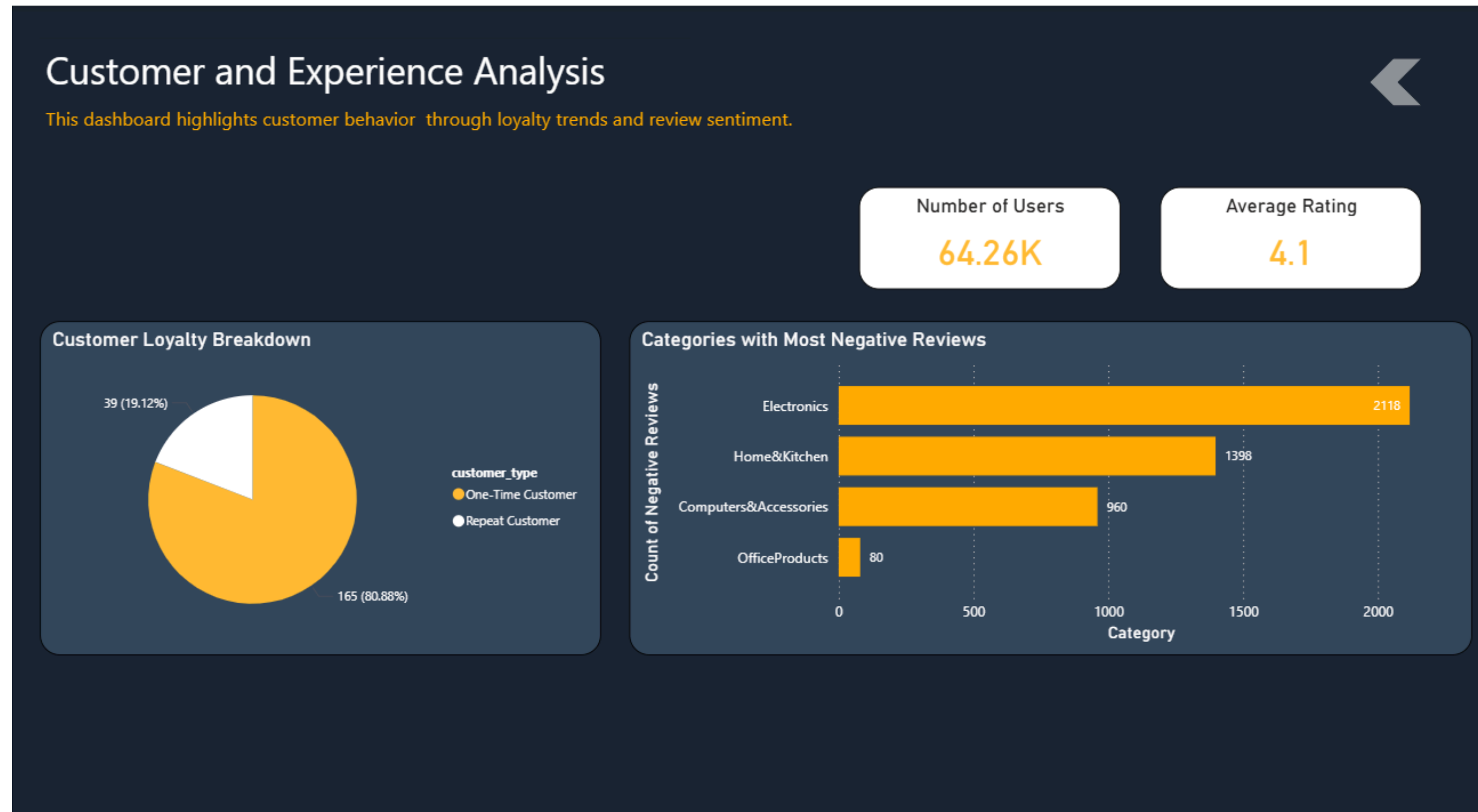
product_name	total_revenue	units_sold	avg_rating
Redmi Note 11 (Horizon Blue, 6GB RAM, 64GB S...	103849011	7989	4.1
Redmi 126 cm (50 inches) 4K Ultra HD Android S...	102032908	3092	4.2
Redmi 9A Sport (Carbon Black, 2GB RAM, 32GB ...	92851213	14287	4.1
Redmi 108 cm (43 inches) 4K Ultra HD Android S...	90257657	3343	4.2
MI 108 cm (43 inches) 5A Series Full HD Smart A...	74572017	2983	4.2

# POWER BI DASHBOARD: SALES & CUSTOMER INSIGHTS



- Compares listed vs discounted prices to evaluate pricing strategy
- Highlights products with deep discounts to assess promotion effectiveness
- Shows optimal discount ranges (20–40%) with highest product concentration
- Visualizes category-wise revenue vs units sold to identify high-value segments

# CUSTOMER & EXPERIENCE ANALYSIS




- Translates user-level SQL review data into actionable customer behavior insights
- Breaks down customer loyalty (repeat vs. one-time buyers) to assess retention trends
- Surfaces categories with the most negative reviews, helping pinpoint areas for CX improvement

# RECOMMENDATIONS



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- **Consider increasing investment in Electronics, as it generated the highest revenue and profit per unit, indicating strong market traction.**
  - **High product ratings didn't always lead to high sales. This suggests other factors, like product visibility, pricing strategy, or category competition, might have a bigger impact on purchase decisions.**
  - **Several products offered steep discounts but still saw very low sales. This shows that heavy discounting doesn't guarantee conversions and may need to be paired with better targeting or exposure.**
  - **Highly engaged users may offer valuable feedback opportunities and could be considered for personalized engagement strategies.**
  - **Categories with high revenue per unit, even if not top-selling by volume, may present opportunities for margin optimization.**
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# THANK YOU!

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Happy to connect!



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<https://github.com/DA-Juhi>

