



# SK Electronic Shop Performance Analysis- Python Project

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# Introduction

The SK Electronics Shop Analysis project was created to study sales, products, and customer behavior of a local electronics shop. The dataset includes details like products, brands, customer age, gender, city, payment methods, and satisfaction ratings.

Through this project, I learned how to clean data, analyze sales trends, and find insights such as top products, best sales channels, and seasonal patterns. This helped me understand how data analysis can solve real shop problems, improve sales, and support better business decisions.

# Dataset Description

The dataset includes Columns :

- **Products** : Information about items like TVs, laptops, mobiles, and accessories.
- **Customers** : Details of buyers such as age, gender, city, and region.
- **Sales** : Records of invoices, dates, quantity, price, discounts, and total amount.
- **Payments** : Information about payment methods like cash, card, or online.
- **Delivery** : Status of delivery and warranty details.
- **Satisfaction** : Customer ratings and feedback after purchase.

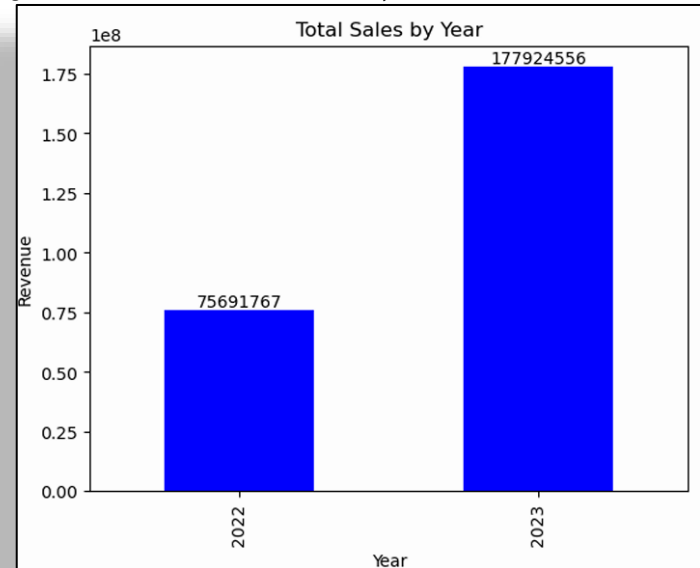
# Problem Statement

- ❑ SK Electronics shop wanted to understand its sales and customers better. The shop faced problems in finding which products earn the most, how seasonal changes affect sales, and what factors impact customer satisfaction.
- ❑ A clear analysis was needed to improve sales, know customer behavior, and make better business decisions.

# Problem Statement

1. How has overall revenue changed year over year?

```
Code : sales_by_year = sk_elec.groupby('Year')['Total_Amount'].sum()  
ax = sales_by_year.plot(kind='bar', title="Total Sales by Year", color='blue')  
plt.ylabel("Revenue")  
for container in ax.containers:  
    ax.bar_label(container, fmt='%0f')  
plt.show()
```

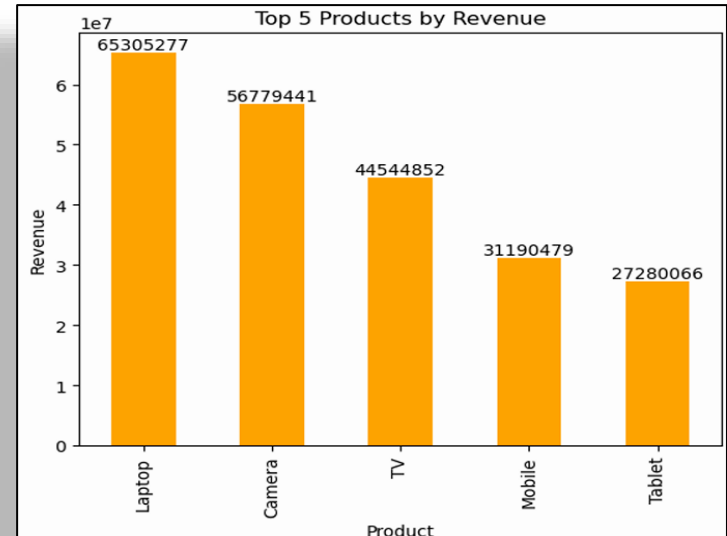


# Problem Statement

2. Which products generate the most revenue?

Code :

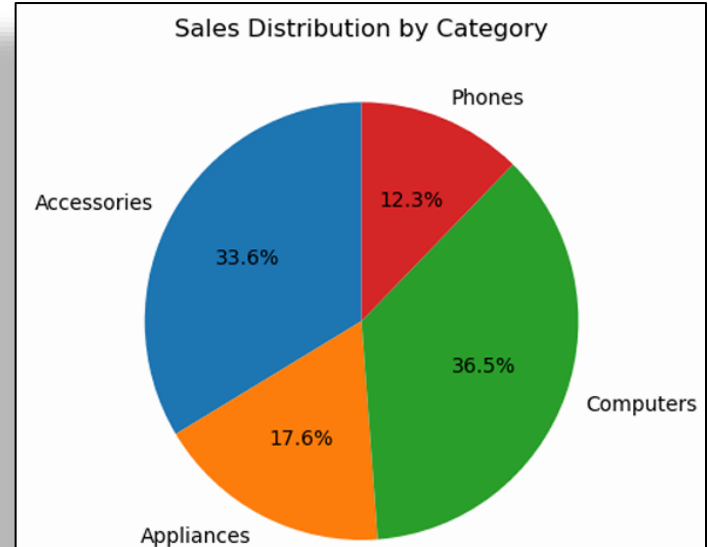
```
top_products=sk_elec.groupby('Product')['Total_Amount'].sum().sort_values(ascending  
ax = top_products.plot(kind='bar', color='orange', title="Top 5 Products by Revenue"  
plt.ylabel("Revenue")  
for container in ax.containers:  
ax.bar_label(container, fmt='%0f')  
plt.show()
```



# Problem Statement

3. Which product categories contribute most to sales?

```
Code : sk_elec.groupby('Category')['Total_Amount'].sum().plot(  
kind='pie', autopct='%1.1f%%', startangle=90, title="Sales Distribution by Category"  
plt.ylabel("")  
plt.show())
```



# Problem Statement

4. What is the age profile of customers?

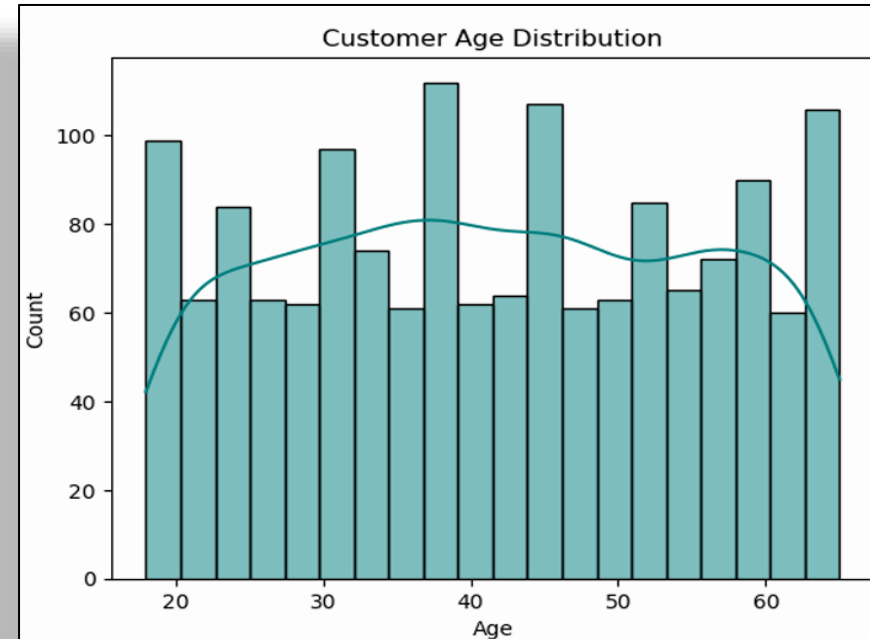
Code : `sns.histplot(sk_elec['Customer_Age'], bins=20, kde=True, color='teal')`

`plt.title("Customer Age Distribution")`

`plt.xlabel("Age")`

`plt.ylabel("Count")`

`plt.show()`

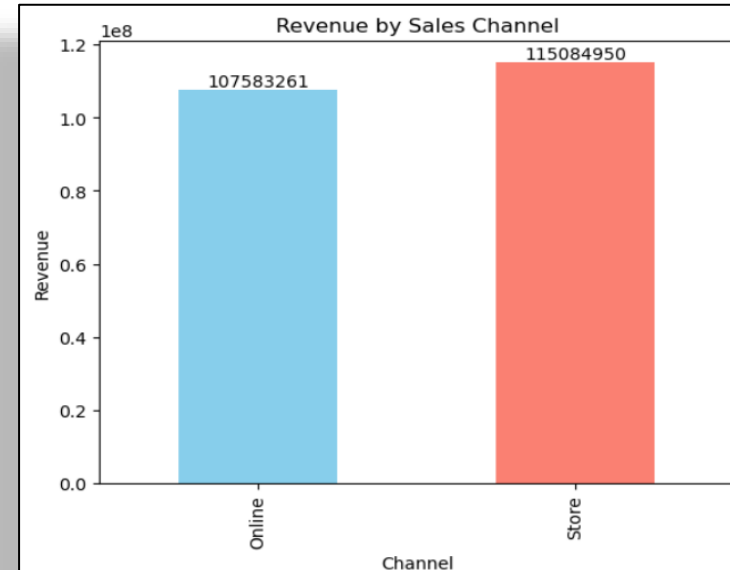




# Problem Statement

5. Which channel online or store performs better?

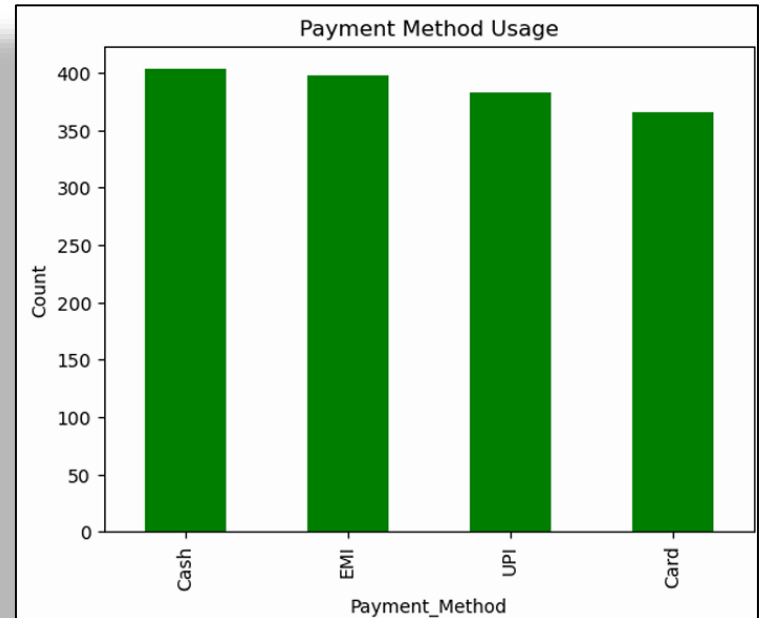
```
Code : cn = sk_elec.groupby('Channel')['Final_Amount'].sum().plot(  
kind='bar', color=['skyblue','salmon'], title="Revenue by Sales Channel")  
plt.ylabel("Revenue")  
for container in ax.containers:  
cn.bar_label(container, fmt='%.0f')  
plt.show()
```



# Problem Statement

6. What are customers' preferred payment methods?

Code : `sk_elec['Payment_Method'].value_counts().plot(kind='bar', color='green', title=`  
`plt.ylabel("Count")`  
`plt.show()`



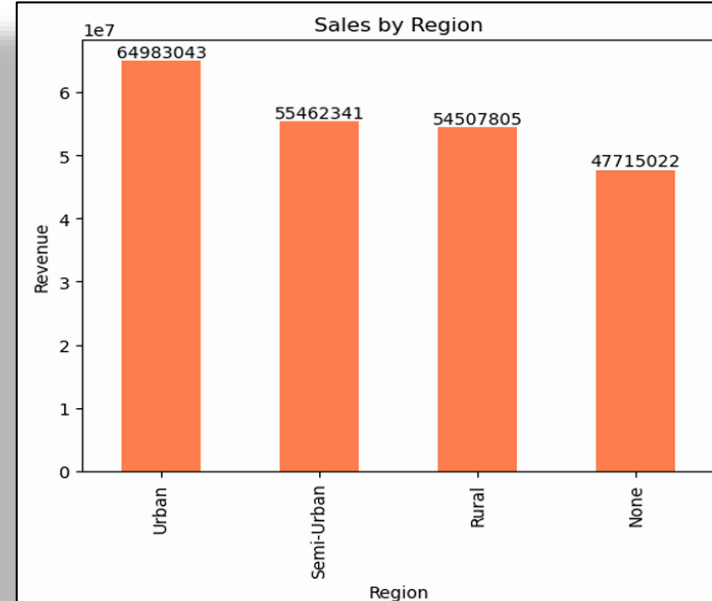
# Problem Statement

7. Which regions contribute most to revenue?

Code :

```
region_sales=sk_elec.groupby('Region')['Final_Amount'].sum().sort_values(ascending
print("Sales by Region:\n", region_sales)

ax = region_sales.plot
(kind='bar', color='coral', title="Sales by Region")
plt.ylabel("Revenue")
for container in ax.containers:
ax.bar_label(container, fmt='%.0f')
plt.show()
```

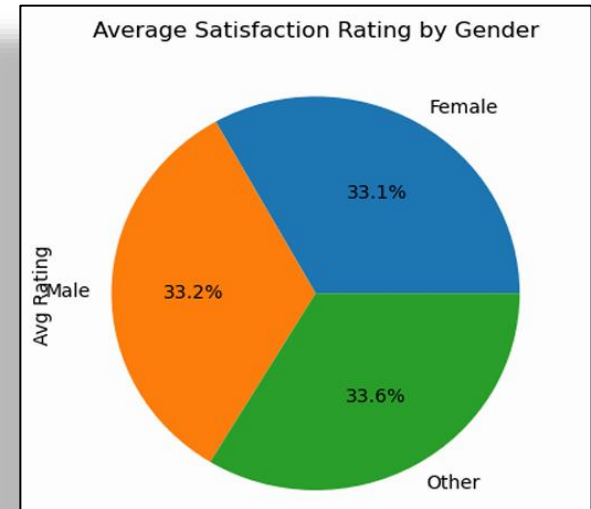


# Problem Statement

8. How does customer satisfaction rating by gender?

Code:

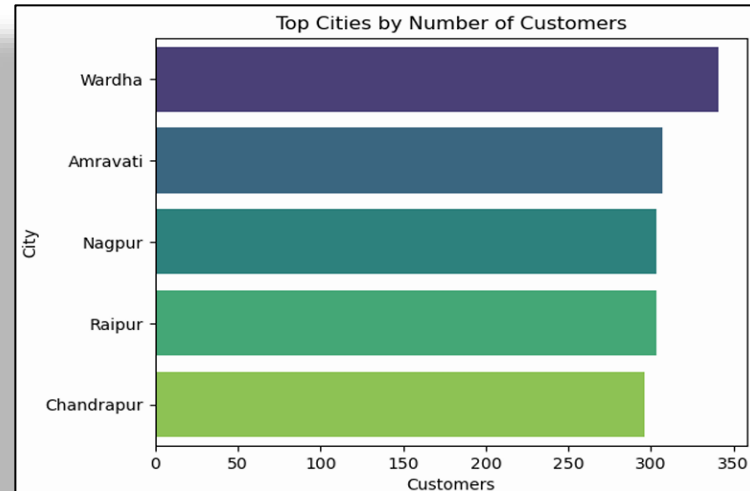
```
gender_rating= sk_elec.groupby('Customer_Gender')['Customer_Satisfaction_Rating']  
gender_rating.plot(kind='pie', color='brown', title="Average Satisfaction Rating by  
Gender"  
plt.ylabel("Avg Rating")  
plt.show()
```



# Problem Statement

9. From which location have most customers come?

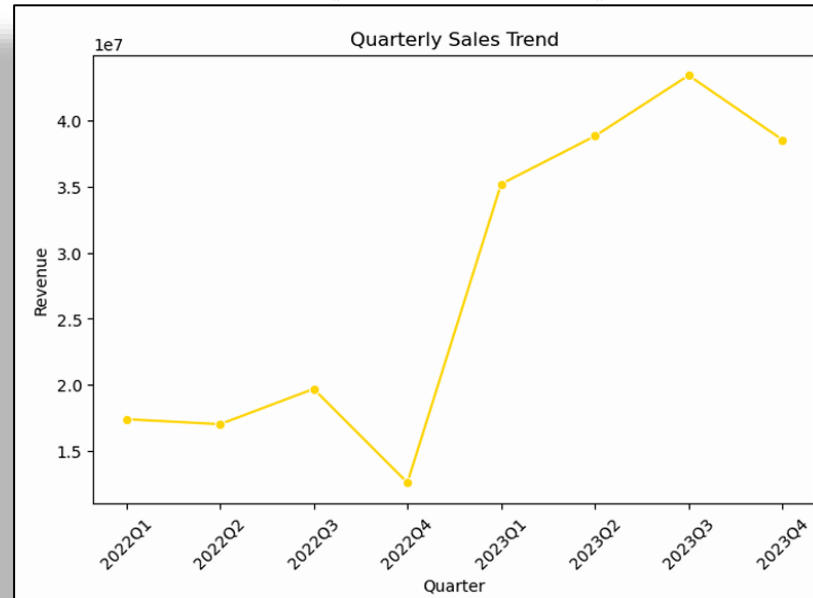
```
Code : city_customers = sk_elec['Customer_City'].value_counts().head(5).reset_index()
city_customers.columns = ['Customer_City', 'Count']
sns.barplot( data=city_customers, x='Count', y='Customer_City', hue='Customer_City',
legend=False)
plt.title("Top Cities by Number of Customers")
plt.xlabel("Customers")
plt.ylabel("City")
plt.show()
```



# Problem Statement

10. In which quarter were the sales the highest?

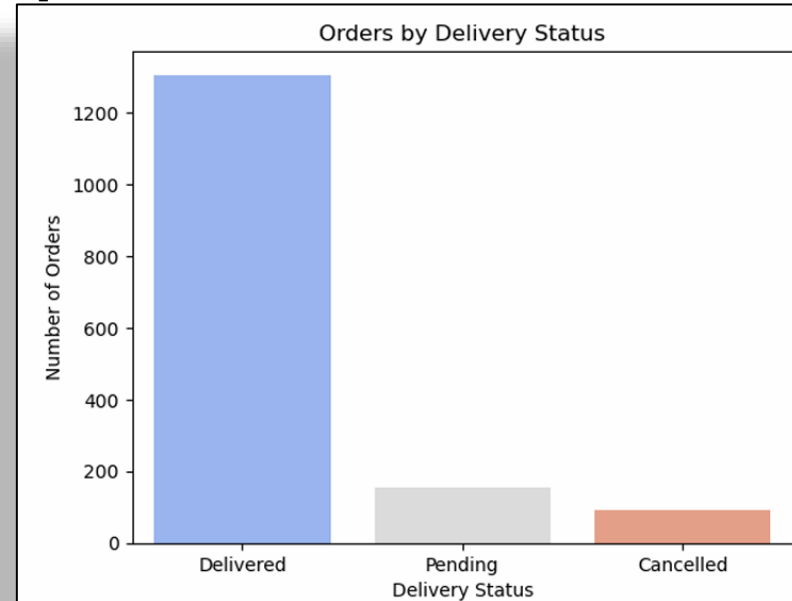
```
Code : sk_elec['Quarter'] = sk_elec['Date'].dt.to_period('Q').astype(str)
quarterly_sales = sk_elec.groupby('Quarter')['Final_Amount'].sum().reset_index()
print("Quarterly Sales:\n", quarterly_sales)
plt.figure(figsize=(8,5))
sns.lineplot(x="Quarter", y="Final_Amount",
data=quarterly_sales, marker="o", color
plt.title("Quarterly Sales Trend")
plt.xlabel("Quarter")
plt.ylabel("Revenue")
plt.xticks(rotation=45)
plt.show()
```



# Problem Statement

11. What is the delivery performance?

```
Code : delivery_count = sk_elec['Delivery_Status'].value_counts().reset_index()  
delivery_count.columns = ['Delivery_Status', 'Count']  
sns.barplot(data=delivery_count,  
x="Delivery_Status",  
y="Count", hue="Delivery_Status"  
palette="coolwarm", legend=False)  
plt.title("Orders by Delivery Status")  
plt.xlabel("Delivery Status")  
plt.ylabel("Number of Orders")  
plt.show()
```



# Insights

**Top Products** – TVs, laptops, and mobiles gave the highest revenue.

**Category Sales** – Electronics (mobiles & laptops) contributed the most to sales.

**Customer Age** – Most buyers were between 25–40 years.

**Payment Methods** – Card and online payments were most preferred.

**Regional Sales** – Urban regions contributed the maximum revenue.

**Quarterly Trend** – Sales peaked in the festive quarter (Q4).

**Delivery Status** – Most orders were delivered successfully.



# Challenges Faced

- The dataset had many **missing values** that needed **cleaning**.
- It was difficult to find which **products** gave the **most revenue**.
- Understanding **seasonal sales patterns** was a challenge.
- Customer **satisfaction ratings** were incomplete and had to be managed.
- Comparing **online and store sales** required proper grouping of data.
- Handling large sales data and making **clear visualizations** took time and effort.

# Suggestions

- ❑ The shop should maintain proper records of sales and customers.
- ❑ Focus on popular products to increase overall revenue.
- ❑ Improve customer service based on feedback and ratings.
- ❑ Give useful discounts during festival seasons to attract buyers.
- ❑ Use simple reports or dashboards to track sales easily.

# Conclusion

The SK Electronics Shop Analysis project helped me understand how to clean and analyze sales data. I learned to find top-selling products, study customer behavior, and check how discounts and seasons affect sales.

This project showed how data analysis can solve real business problems, improve decision-making, and support shop owners in increasing sales and customer satisfaction.

# Thank you