

EXPT NO: 7	EXPERIMENT: DATA VISUALIZATION USING TABLEAU
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## AIM

To perform data visualization using **Tableau** by connecting to data sources, creating visualizations (bar charts, line charts, pie charts), calculated fields, and building dashboards and stories.

## ALGORITHM

1. **Open Tableau Desktop** and familiarize yourself with the **Tableau Interface**.
2. **Connect to data sources** (Excel, CSV, SQL, etc.) using *Connect Pane*.
3. **Load dataset** into Tableau workspace.
4. **Data Preparation:**
  - o Rename fields, filter unwanted rows.
  - o Create **Calculated Fields**.
    - Example:
    - $\text{Profit} = [\text{Revenue}] - [\text{Cost}]$
5. **Create Visualizations:**
  - o Bar Chart (Sales by Category)
  - o Line Chart (Sales Trend by Month)
  - o Pie Chart (Market Share by Region)
6. **Build Dashboards:**
  - o Go to *Dashboard* → *New Dashboard*
  - o Drag required sheets into dashboard canvas.
  - o Add filters, legends, and interactive controls.
7. **Build Stories (Optional):** Combine dashboards into *Stories* for presentations.

## CODE / IMPLEMENTATION

```
# -----
# EXPERIMENT 7: DATA VISUALIZATION USING TABLEAU (Simulation in Python)
# -----



import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px

# Step 1: Load Data (Simulating Excel/CSV/SQL connection)
data = pd.DataFrame({
    "Category": ["Electronics", "Clothing", "Furniture", "Electronics",
    "Clothing", "Furniture"],
    "Region": ["North", "South", "East", "West", "North", "South"],
    "Revenue": [20000, 15000, 18000, 25000, 12000, 16000],
    "Cost": [12000, 7000, 9000, 14000, 6000, 8000],
    "Discount": [5, 10, 7, 6, 8, 9]
})

# Step 2: Create Calculated Fields (like Tableau Calculated Fields)
data["Profit"] = data["Revenue"] - data["Cost"]
data["Profit Ratio"] = data["Profit"] / data["Revenue"]

print("== Tableau Simulation Results ==")
print(data[["Category", "Region", "Revenue", "Cost", "Profit", "Profit
Ratio"]])

# Step 3: Create Visualizations
# Bar Chart - Sales by Category
plt.figure(figsize=(6,4))
sns.barplot(x="Category", y="Revenue", data=data, estimator=sum, hue="Region")
plt.title("Revenue by Category and Region")
plt.show()

# Line Chart - Sales Trend
plt.figure(figsize=(6,4))
sns.lineplot(x=data.index, y="Revenue", data=data, marker="o")
plt.title("Sales Trend Over Transactions")
plt.show()

# Pie Chart - Regional Distribution
region_share = data.groupby("Region")["Revenue"].sum()
plt.figure(figsize=(6,6))
plt.pie(region_share, labels=region_share.index, autopct="%1.1f%%")
plt.title("Regional Revenue Distribution")
plt.show()
```

```

# Step 4: Interactive Dashboard (Plotly like Tableau Dashboards/Stories)
fig1 = px.bar(data, x="Category", y="Revenue", color="Region", title="Revenue by Category and Region")
fig2 = px.line(data, x=data.index, y="Revenue", markers=True, title="Sales Trend")
fig3 = px.pie(data, values="Revenue", names="Region", title="Revenue by Region")

fig1.show()
fig2.show()
fig3.show()

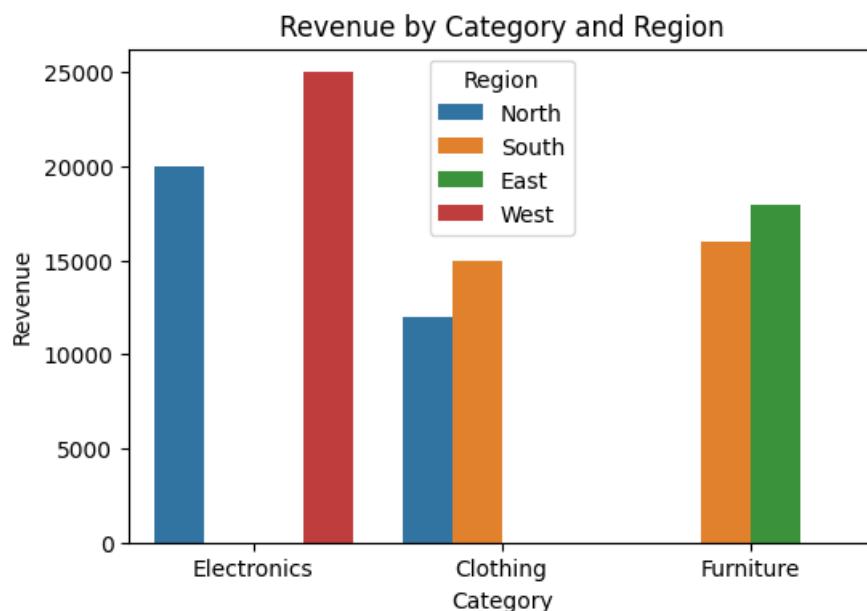
```

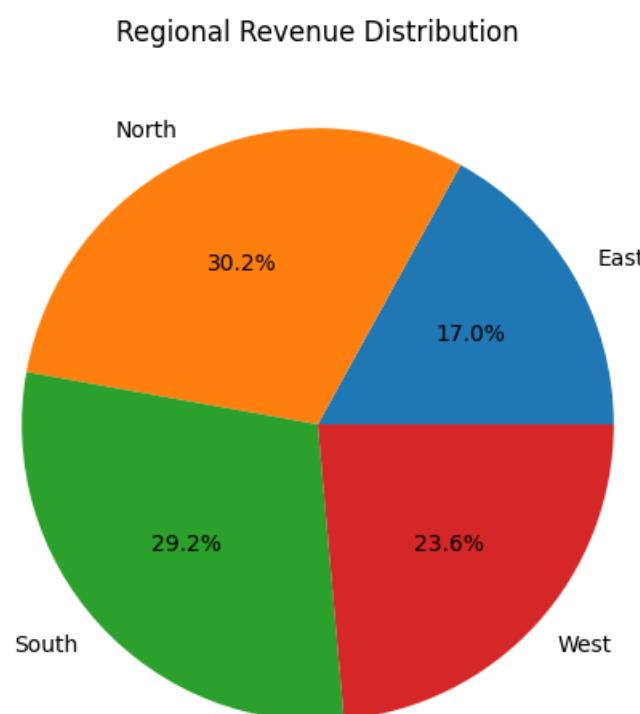
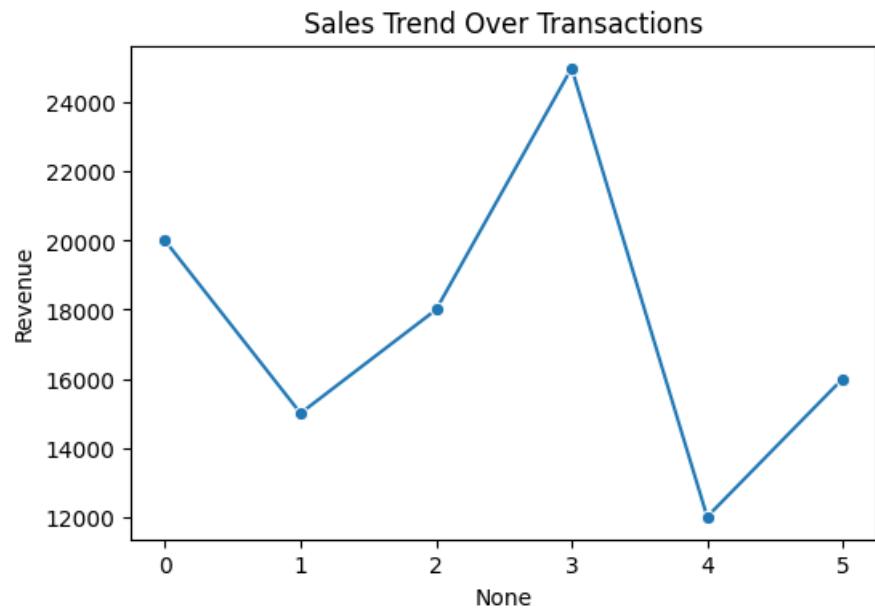
## OUTPUT

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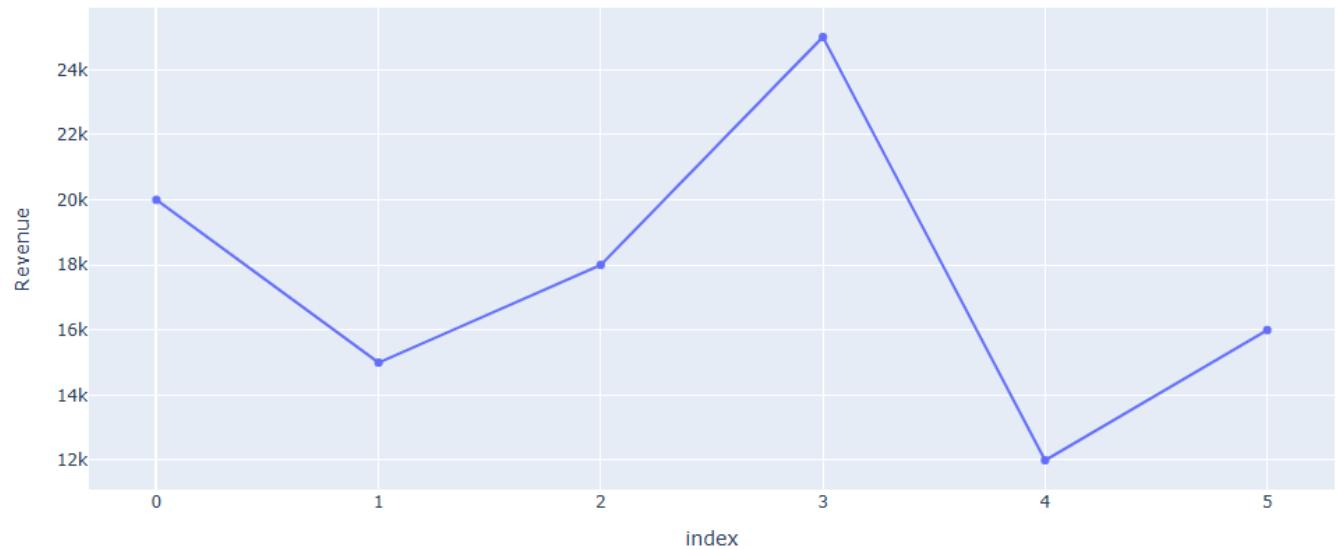
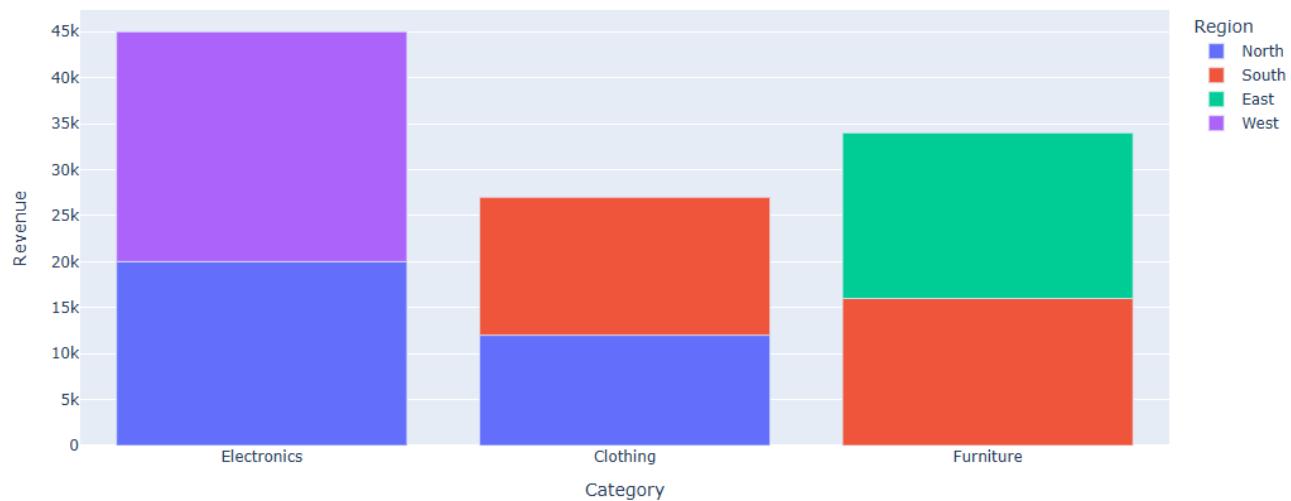
==== Tableau Simulation Results ====
    Category Region  Revenue  Cost  Profit  Profit Ratio
0   Electronics  North    20000  12000    8000    0.400000
1     Clothing  South    15000   7000    8000    0.533333
2   Furniture   East    18000   9000    9000    0.500000
3   Electronics  West    25000  14000   11000    0.440000
4     Clothing  North    12000   6000    6000    0.500000
5   Furniture   South    16000   8000    8000    0.500000

```

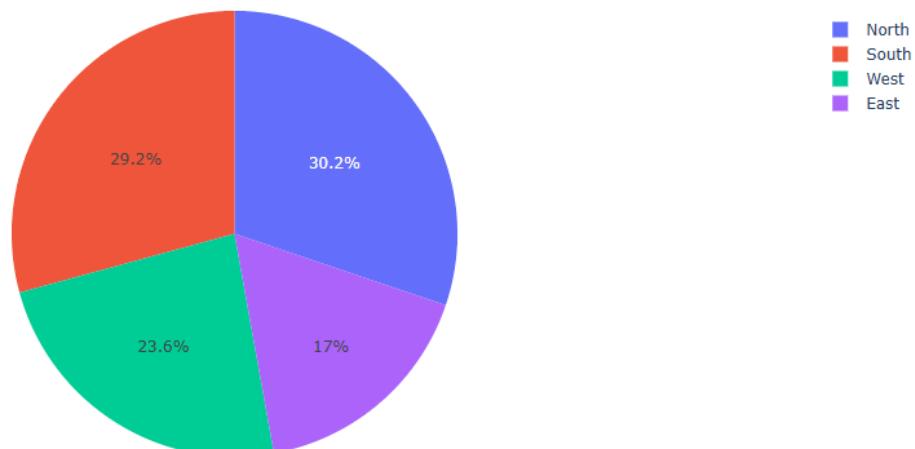




### Revenue by Category and Region



### Revenue by Region



## **RESULT:**

An interactive **Tableau dashboard** was successfully created with multiple visualizations showing **sales trends, distribution by category, and regional performance**. A story was built by combining dashboards to demonstrate insights step by step.