**objective** Task 2: Data Visualization and Storytelling Objective: Create visualizations that convey a compelling story. Tools: Tableau / Power BI Deliverables: Visual report (PDF or dashboard screenshots) .Perform task with code in python ,required for intership

## Step 1: Prepare Your Environment

Make sure you have the necessary libraries installed. You can install them using pip:

```
bash
pip install pandas matplotlib seaborn plotly
```

## Step 2: Load Your Data

For this example, let's create a sample dataset. You can replace this with your actual dataset.

```
python
import pandas as pd

Sample data creation


data = {
    'Month': ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct',
'Nov', 'Dec'],
    'Sales': [200, 220, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700],
    'Profit': [20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130]
}


df = pd.DataFrame(data)
```

## Step 3: Create Visualizations

Now, let's create some visualizations using Matplotlib and Seaborn.

#### 1. Line Chart for Sales and Profit Over Time

```
 python
import matplotlib.pyplot as plt
import seaborn as sns

Set the style


sns.set(style="whitegrid")

Create a line plot


plt.figure(figsize=(12, 6))
plt.plot(df['Month'], df['Sales'], marker='o', label='Sales', color='blue')
plt.plot(df['Month'], df['Profit'], marker='o', label='Profit', color='green')

Adding titles and labels


plt.title('Monthly Sales and Profit Over Time', fontsize=16)
plt.xlabel('Month', fontsize=14)
plt.ylabel('Amount ($)', fontsize=14)
plt.xticks(rotation=45)
plt.legend()
plt.grid()

Show the plot


plt.tight_layout()
plt.savefig('sales_profit_over_time.png')  # Save the figure
plt.show()
```

#### 2. Bar Chart for Sales and Profit Comparison

```
 python

Create a bar plot


plt.figure(figsize=(12, 6))
bar_width = 0.35
x = range(len(df['Month']))

Create bars for Sales and Profit


plt.bar(x, df['Sales'], width=bar_width, label='Sales', color='blue', align='center')
plt.bar([p + bar_width for p in x], df['Profit'], width=bar_width, label='Profit',
```

```
color='green', align='center')

Adding titles and labels


plt.title('Monthly Sales and Profit Comparison', fontsize=16)
plt.xlabel('Month', fontsize=14)
plt.ylabel('Amount ($)', fontsize=14)
plt.xticks([p + bar_width / 2 for p in x], df['Month'])
plt.legend()
plt.grid()

Show the plot


plt.tight_layout()
plt.savefig('sales_profit_comparison.png')  # Save the figure
plt.show()
```

## Step 4: Create a Compelling Story

You can summarize your findings based on the visualizations. For example:

- Sales Growth: The line chart shows a steady increase in sales from January to December, indicating a successful year.
- Profit Margin: The profit also increases, suggesting that the business is not only selling more but also maintaining a healthy profit margin.

## Step 5: Export Your Visualizations

You can save your visualizations as images or compile them into a PDF report using libraries like `matplotlib.backends.backend_pdf`.

```python from matplotlib.backends.backend_pdf import PdfPages

with PdfPages('sales_report.pdf') as pdf: plt.figure(figsize=(12, 6)) plt.plot(df['Month'], df['Sales'], marker='o', label='Sales', color='blue') plt.plot(df['Month'], df['Profit'], marker='o', label='Profit', color='green') plt.title('Monthly Sales and Profit Over Time', fontsize=16) plt.xlabel('Month', fontsize=14) plt.ylabel('Amount ($)', fontsize=14) plt.xticks(rotation=45) plt.legend() plt.grid() pdf.savefig() # saves the current figure into a pdf page plt.close()

plt.figure(figsize=(12, 6)) plt.bar(x, df['Sales'], width=bar_width, label='Sales', color='blue', align='center') plt.bar([p + bar_width for p in x], df['Profit'], width=bar_width, label='Profit', color='green', align='center') plt.title('Monthly Sales
```