Financial Data Analysis: Microsoft, Tesla, and Apple

Introduction

This notebook analyzes the financial performance of Microsoft, Tesla, and Apple for the last three fiscal years using SEC 10-K filings.
We will extract key financial figures and examine growth trends to derive insights.

Data Metrics

We will analyze the following financial metrics:

- **Total Revenue**
- **Net Income**
- **Total Assets**
- **Total Liabilities**
- **Cash Flow from Operating Activities**

Analysis Goals

- Calculate **Year-over-Year Growth** for each metric
- Compare company performance
- Visualize trends using charts

In [ ]:
```
!pip install matplotlib seaborn
```

In [ ]:
```
!conda install matplotlib seaborn -y
```

In [23]:
```
# Import necessary libraries
import pandas as pd
```

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

# Load the CSV file (update the correct path if needed)
df = pd.read_csv("D:/NYUAD/Internships/10K report.csv")
```

In [24]:
```
# Print column names to check for issues
print("Column Names in CSV:", df.columns.tolist())

# Rename columns to match properly
df.columns = df.columns.str.strip()  # Remove unwanted spaces
df.rename(columns={
    "T Revenue": "Total Revenue",
    "Net income": "Net Income",
    "T Assests": "Total Assets",
    "T Liabilities": "Total Liabilities",
    "Cash Flow (Operation)": "Cash Flow from Operating Activities"
}, inplace=True)
```

```
Column Names in CSV: ['Company', 'Year', 'T Revenue ', 'Net income ', 'T Assests ', 'T Liabilities ', 'Cash Flow (Operation)']
```

In [25]:
```
# Convert 'Year' column to string for proper visualization
df["Year"] = df["Year"].astype(str)

# Display the cleaned dataframe
print(df)

# -------------------------
# 📌 **Step 1: Table Representation**
# -------------------------
summary = df.pivot_table(index=["Company", "Year"],
                         values=["Total Revenue", "Net Income", "Total Assets", "Total Liabilities", "Cash Flow from Operating
                         aggfunc="sum")

# Display the summary table
print(summary)
```

	Company	Year	Total Revenue	Net Income	Total Assets	Total Liabilities
0	Microsoft	2,024	245,122	88,136	512,163	243,686
1	Microsoft	2023	211,915	72,361	411,976	205,753
2	Microsoft	2022	198,270	72,738	364,840	364,840
3	Tesla	2024	97,690	7,153	122070	48,390
4	Tesla	2023	96,773	14,974	106618	43,009
5	Tesla	2022	81,462	12,587	82,338	36,440
6	Apple	2024	383,285	93,736	364,980	308,030
7	Apple	2023	394,328	96,995	352,583	290,437
8	Apple	2022	365,817	99,803	352,755	302,083

	Cash Flow from Operating Activities
0	118,548
1	87,582
2	89,035
3	14,923
4	13,256
5	14,724
6	118,254
7	110,543
8	122,151

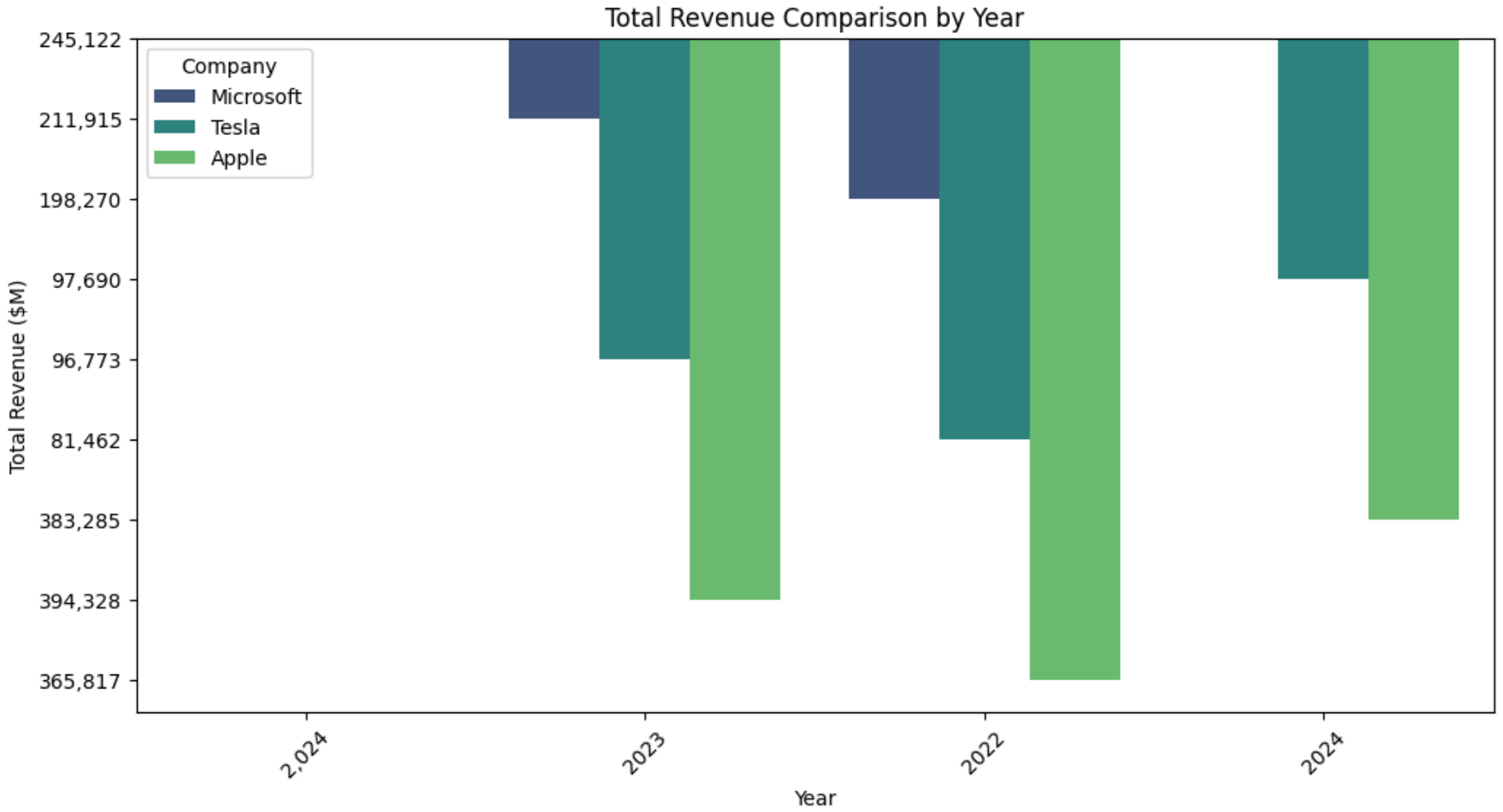
		Cash Flow from Operating Activities	Net Income	Total Assets
Company	Year			
Apple	2022	122,151	99,803	352,755
	2023	110,543	96,995	352,583
	2024	118,254	93,736	364,980
Microsoft	2,024	118,548	88,136	512,163
	2022	89,035	72,738	364,840
	2023	87,582	72,361	411,976
Tesla	2022	14,724	12,587	82,338
	2023	13,256	14,974	106618
	2024	14,923	7,153	122070

		Total Liabilities	Total Revenue
Company	Year		
Apple	2022	302,083	365,817
	2023	290,437	394,328
	2024	308,030	383,285
Microsoft	2,024	243,686	245,122
	2022	364,840	198,270
	2023	205,753	211,915

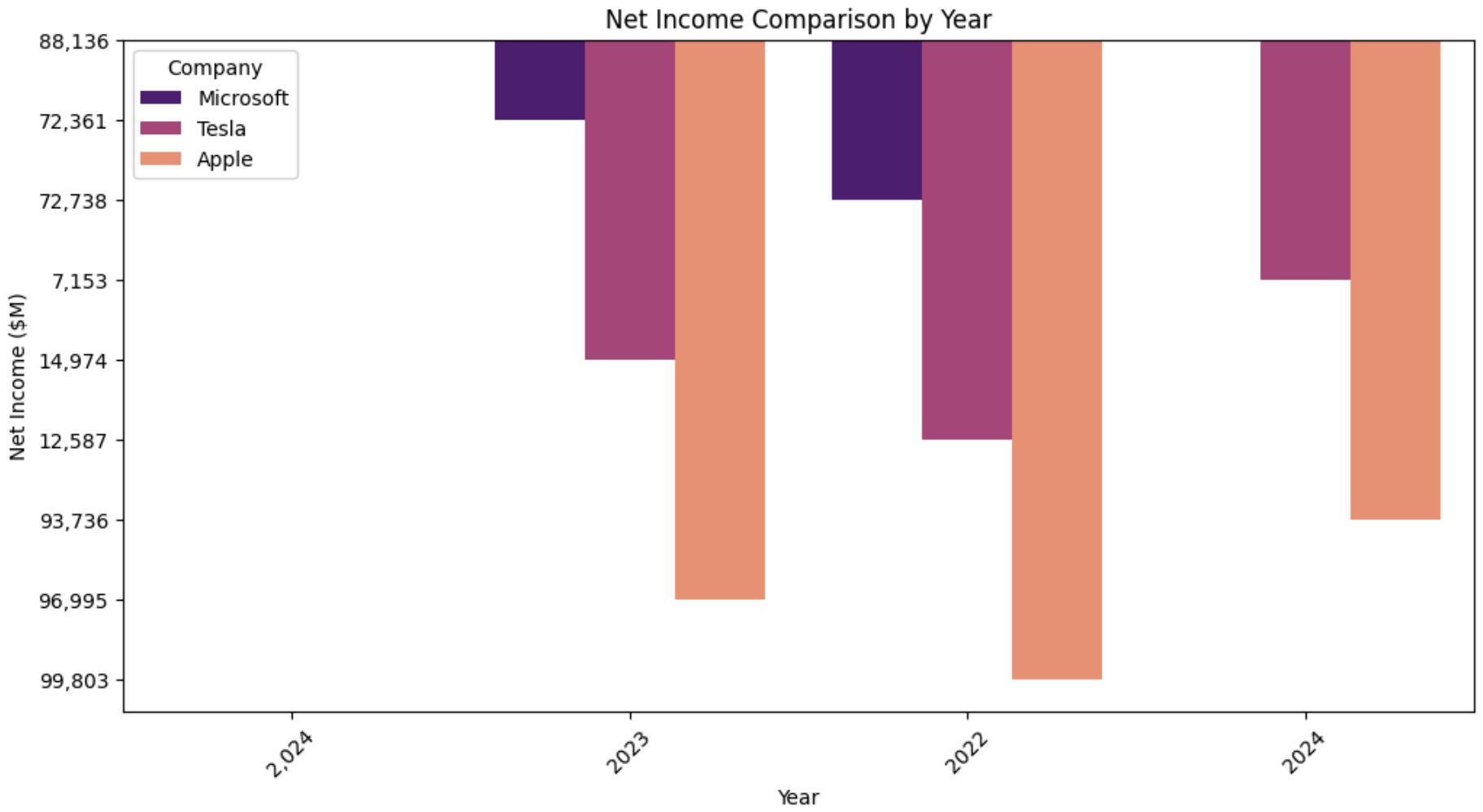
```
Tesla     2022            36,440        81,462
          2023            43,009        96,773
          2024            48,390        97,690
```

In [32]:

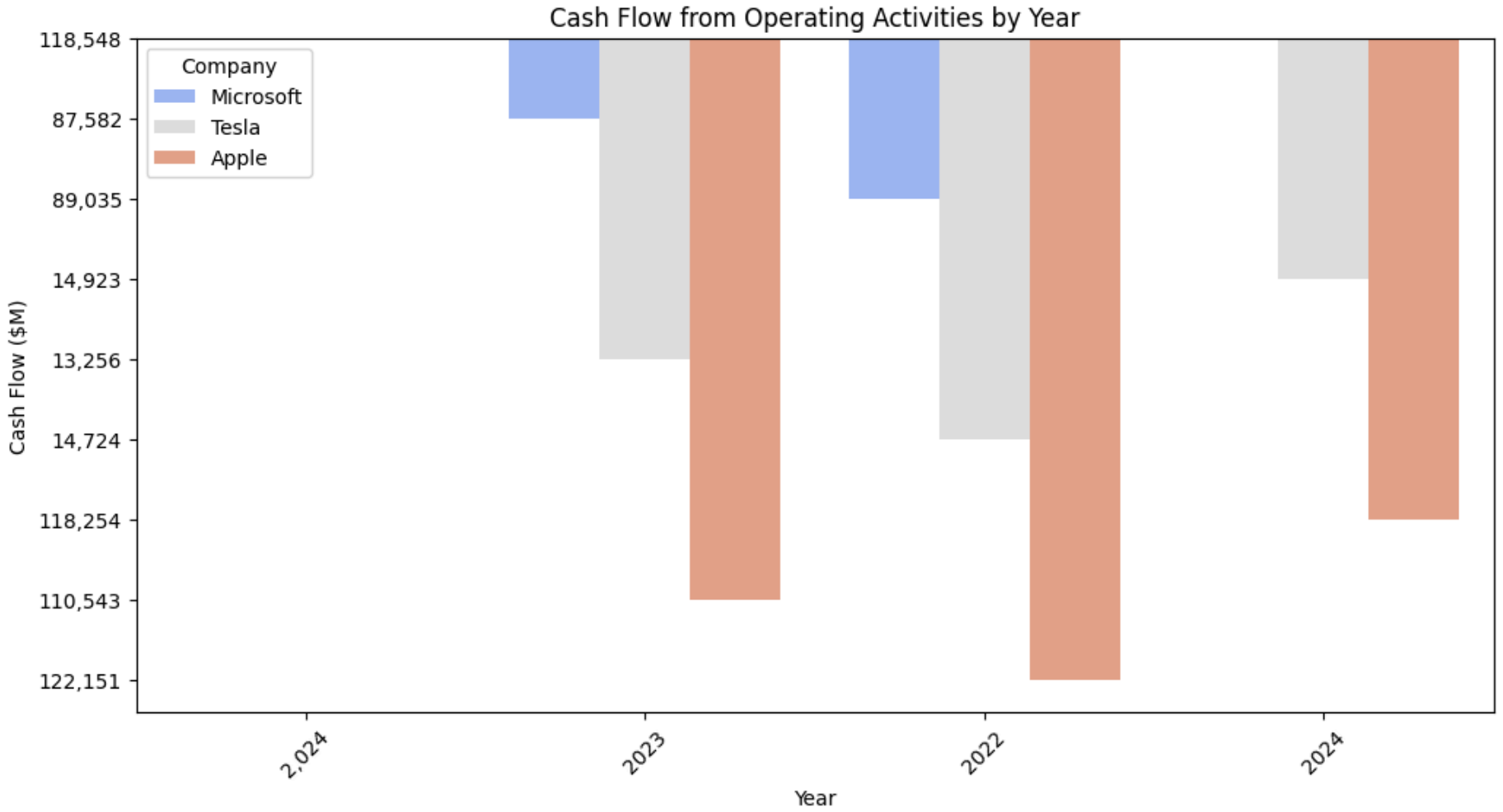
```python
# -------------------------
# 📊 **Step 2: Data Visualization**
# -------------------------
plt.figure(figsize=(12, 6))
sns.barplot(data=df, x="Year", y="Total Revenue", hue="Company", palette="viridis")
plt.title("Total Revenue Comparison by Year")
plt.xticks(rotation=45)
plt.ylabel("Total Revenue ($M)")
plt.xlabel("Year")
plt.legend(title="Company")
plt.show()
```


Total Revenue Comparison by Year
Company
Microsoft
Tesla
Apple
245,122
211,915
198,270
97,690
96,773
81,462
383,285
394,328
365,817
Total Revenue ($M)
2,024
2023
2022
2024
Year

In [27]:



In [28]:
```
# Plot for Cash Flow
plt.figure(figsize=(12, 6))
sns.barplot(data=df, x="Year", y="Cash Flow from Operating Activities", hue="Company", palette="coolwarm")
plt.title("Cash Flow from Operating Activities by Year")
plt.xticks(rotation=45)
plt.ylabel("Cash Flow ($M)")
plt.xlabel("Year")
plt.legend(title="Company")
plt.show()
```


Cash Flow from Operating Activities by Year
Company
Microsoft
Tesla
Apple
118,548
87,582
89,035
14,923
13,256
14,724
118,254
110,543
122,151
Cash Flow ($M)
2,024
2023
2022
2024
Year

In [ ]: