

```
In [18]: import pandas as pd
```

```
In [20]: df = pd.read_csv("C:\\Panda notebook file\\Fin.csv")
```

```
In [22]: pd.set_option('display.max_rows', None)
pd.set_option('display.max_columns', None)
pd.set_option('display.width', None)
pd.set_option('display.max_colwidth', None)
```

```
In [24]: display(df)
```

	Company	Year	Cash Flow from Operating Activities.	Net Income	Total Assets	Total Liabilities	Total Revenue	Unnamed: 7	Unnam
0	Microsoft	2022	89035	72738	411976.0	205753.0	198270	NaN	1
1	Microsoft	2023	87582	72361	512163.0	243686.0	211915	NaN	1
2	Microsoft	2024	118548	88136	NaN	NaN	245122	NaN	1
3	Apple	2022	122151	99803	352583.0	290437.0	394328	NaN	1
4	Apple	2023	110543	96995	364980.0	308030.0	383285	NaN	1
5	Apple	2024	118254	93736	NaN	NaN	391035	NaN	1
6	Tesla	2022	14723	12587	106618.0	43009.0	81462	NaN	1
7	Tesla	2023	13256	14974	122070.0	48390.0	96773	NaN	1
8	Tesla	2024	14923	7153	NaN	NaN	97690	NaN	1

```
In [26]: df['Revenue Growth (%)'] = df.groupby(['Company'])['Total Revenue'].pct_change()
df['Net Income Growth (%)'] = df.groupby(['Company'])['Net Income'].pct_change()
```

```
In [28]: print(df)
```

	Company	Year	Cash Flow from Operating Activities.	Net Income	\
0	Microsoft	2022	89035	72738	
1	Microsoft	2023	87582	72361	
2	Microsoft	2024	118548	88136	
3	Apple	2022	122151	99803	
4	Apple	2023	110543	96995	
5	Apple	2024	118254	93736	
6	Tesla	2022	14723	12587	
7	Tesla	2023	13256	14974	
8	Tesla	2024	14923	7153	

	Total Assets	Total Liabilities	Total Revenue	Unnamed: 7	Unnamed: 8	\
0	411976.0	205753.0	198270	NaN	NaN	
1	512163.0	243686.0	211915	NaN	NaN	
2	NaN	NaN	245122	NaN	NaN	
3	352583.0	290437.0	394328	NaN	NaN	
4	364980.0	308030.0	383285	NaN	NaN	
5	NaN	NaN	391035	NaN	NaN	
6	106618.0	43009.0	81462	NaN	NaN	
7	122070.0	48390.0	96773	NaN	NaN	
8	NaN	NaN	97690	NaN	NaN	

	Revenue Growth (%)	Net Income Growth (%)
0	NaN	NaN
1	6.882030	-0.518299
2	15.669962	21.800417
3	NaN	NaN
4	-2.800461	-2.813543
5	2.021994	-3.359967
6	NaN	NaN
7	18.795267	18.964010
8	0.947578	-52.230533

In [30]: `df.head(10)`

Out[30]:

	Company	Year	Cash Flow from Operating Activities.	Net Income	Total Assets	Total Liabilities	Total Revenue	Unnamed: 7	Unna
0	Microsoft	2022	89035	72738	411976.0	205753.0	198270	NaN	
1	Microsoft	2023	87582	72361	512163.0	243686.0	211915	NaN	
2	Microsoft	2024	118548	88136	NaN	NaN	245122	NaN	
3	Apple	2022	122151	99803	352583.0	290437.0	394328	NaN	
4	Apple	2023	110543	96995	364980.0	308030.0	383285	NaN	
5	Apple	2024	118254	93736	NaN	NaN	391035	NaN	
6	Tesla	2022	14723	12587	106618.0	43009.0	81462	NaN	
7	Tesla	2023	13256	14974	122070.0	48390.0	96773	NaN	
8	Tesla	2024	14923	7153	NaN	NaN	97690	NaN	

In [32]: `pd.options.display.float_format = '{:,.2f}%'.format`

```
In [34]: df[['Company', 'Year', 'Revenue Growth (%)', 'Net Income Growth (%)']]
```

```
Out[34]:
```

	Company	Year	Revenue Growth (%)	Net Income Growth (%)
0	Microsoft	2022	NaN	NaN
1	Microsoft	2023	6.88%	-0.52%
2	Microsoft	2024	15.67%	21.80%
3	Apple	2022	NaN	NaN
4	Apple	2023	-2.80%	-2.81%
5	Apple	2024	2.02%	-3.36%
6	Tesla	2022	NaN	NaN
7	Tesla	2023	18.80%	18.96%
8	Tesla	2024	0.95%	-52.23%

```
In [36]: df.groupby('Company')[['Total Revenue', 'Net Income']].sum()
```

```
Out[36]:
```

	Total Revenue	Net Income
Company		
Apple	1168648	290534
Microsoft	655307	233235
Tesla	275925	34714

```
In [38]: df.groupby('Company')[['Revenue Growth (%)', 'Net Income Growth (%)']].mean()
```

```
Out[38]:
```

	Revenue Growth (%)	Net Income Growth (%)
Company		
Apple	-0.39%	-3.09%
Microsoft	11.28%	10.64%
Tesla	9.87%	-16.63%

```
In [40]: df.groupby(['Year', 'Company'])['Total Revenue'].sum().unstack()
```

```
Out[40]:
```

Company	Apple	Microsoft	Tesla
Year			
2022	394328	198270	81462
2023	383285	211915	96773
2024	391035	245122	97690

```
In [44]: df.groupby(['Company', 'Year'])['Net Income Growth (%)'].mean()
```

```
Out[44]: Company Year
Apple 2022 NaN
      2023 -2.81%
      2024 -3.36%
Microsoft 2022 NaN
          2023 -0.52%
          2024 21.80%
Tesla 2022 NaN
      2023 18.96%
      2024 -52.23%
Name: Net Income Growth (%), dtype: float64
```

```
In [46]: df.groupby('Company')[['Total Revenue', 'Net Income']].agg(['max', 'min'])
```

Out[46]:

	Total Revenue		Net Income	
	max	min	max	min
Company				
Apple	394328	383285	99803	93736
Microsoft	245122	198270	88136	72361
Tesla	97690	81462	14974	7153



Financial Analysis Summary

Analysis of Revenue and Net Income Growth (2022-2024)

This dataset provides the revenue and net income growth for three companies: Microsoft, Apple, and Tesla, from 2022 to 2024. Key observations:

- **Microsoft:**
 - Revenue growth is consistently positive, showing significant improvement from 6.88% in 2023 to 15.67% in 2024.
 - Net income growth is negative in 2023 but recovers with a strong 21.80% growth in 2024.
- **Apple:**
 - The company saw a decline in revenue and net income in 2023 with a -2.80% and -2.81% growth, respectively.
 - In 2024, Apple experienced a mild recovery in revenue growth at 2.02%, though net income growth continued to decline at -3.36%.
- **Tesla:**
 - Tesla's revenue growth surged in 2023 at 18.80% and remained positive in 2024 at 0.95%.

- Net income growth was strong in 2023 at 18.96%, but sharply declined by -52.23% in 2024.

This analysis highlights the varying financial health of the companies, with Microsoft showing strong recovery, Apple facing challenges in growth, and Tesla experiencing fluctuating results.

Total Revenue and Net Income Analysis (2022-2024)

The table below summarizes the total revenue and net income for Apple, Microsoft, and Tesla over the 2022–2024 period:

- **Apple** generated the highest total revenue (**1,168,648**) and also led in net income (**290,534**), indicating strong financial performance.
- **Microsoft** followed with **655,307** in revenue and **233,235** in net income, showing high profitability relative to its revenue.
- **Tesla** had the lowest total revenue (**275,925**) and net income (**34,714**), reflecting its smaller scale compared to Apple and Microsoft.

Overall, Apple dominates in both metrics, while Microsoft maintains strong profitability. Tesla, although growing, lags behind in scale and earnings.



Growth Trends (Average Revenue and Net Income Growth)

This section analyzes the **average year-on-year growth** in both revenue and net income for each company:

- **Microsoft** showed the **strongest overall financial growth**, with an impressive **11.28% average revenue growth** and **10.64% average net income growth**. This indicates consistent business expansion and profitability.
- **Tesla** experienced a **high average revenue growth of 9.87%**, which signals strong top-line performance. However, its **net income growth was negative at -16.63%**, suggesting rising costs or operational inefficiencies impacting profitability despite growing revenues.
- **Apple**, on the other hand, saw a **slight average revenue decline of -0.39%** and **net income decline of -3.09%**, indicating relative stagnation or a period of slower growth during the analyzed years.



Summary:

- Microsoft is currently the most balanced performer, showing solid growth in both sales and profit.

- Tesla is growing rapidly in revenue but is struggling with profitability.
- Apple had a more stable or plateauing trend with modest decreases in both metrics.

Year-wise Net Income Growth Analysis (2022-2024)

This breakdown highlights the yearly changes in net income growth for Apple, Microsoft, and Tesla:

- **Apple** showed consecutive declines in net income growth: **-2.81% in 2023** and **-3.36% in 2024**, indicating a downward profitability trend.
- **Microsoft** experienced a small decline in **2023 (-0.52%)**, followed by a strong recovery in **2024 (21.80%)**.
- **Tesla** had a significant positive growth in **2023 (18.96%)**, but faced a drastic drop in **2024 (-52.23%)**, reflecting financial volatility.

Overall, Microsoft showed notable improvement, Apple faced ongoing decline, and Tesla exhibited instability in net income growth.

Max and Min Revenue & Net Income (2022-2024)

This table shows the maximum and minimum total revenue and net income for Apple, Microsoft, and Tesla over three years:

- **Apple** reported the highest revenue (**394,328**) and net income (**99,803**) among all companies, with relatively small variation, indicating consistent performance.
- **Microsoft** had a revenue range from **198,270** to **245,122**, and net income between **72,361** and **88,136**, showing stable but lower figures than Apple.
- **Tesla** displayed the lowest figures across both metrics, with revenue between **81,462** and **97,690**, and net income from **7,153** to **14,974**, reflecting its smaller scale and profitability.

Overall, Apple leads in both revenue and earnings, while Tesla remains the smallest and most variable performer.

Company Revenue and Net Income Summary

- **Apple** has the highest maximum revenue (**394,328**) and net income (**99,803**) among all companies, showing strong financial performance.
- **Microsoft** shows consistent performance with high revenue (**max: 245,122 , min: 198,270**) and net income (**max: 88,136 , min: 72,361**), indicating stability.

- **Tesla** has the lowest figures across both revenue (max: 97,690) and net income (max: 14,974), reflecting its comparatively smaller scale.

This summary highlights Apple's dominance, Microsoft's consistency, and Tesla's growth potential.



Executive Financial Summary (2022–2024)

Net Income Growth Trends

Microsoft exhibited the strongest profitability trajectory, rebounding from a slight dip in 2023 (−0.52%) to a significant growth of +21.80% in 2024, indicating effective operational and strategic execution.

Apple faced consistent downward pressure on profitability, with net income growth declining −2.81% in 2023 and −3.36% in 2024, reflecting potential margin compression or rising costs.

Tesla experienced a sharp fluctuation, posting strong growth of +18.96% in 2023, followed by a steep decline of −52.23% in 2024—highlighting volatility in earnings and potential instability.

Revenue and Profit Performance Ranges

Apple maintained leadership in scale and consistency, recording the highest total revenue and net income across the period. Revenue ranged from 383K to 394K, and net income from 98K to 100K, indicating strong financial resilience.

Microsoft demonstrated solid and stable performance, with revenue between 198K and 245K, and net income ranging from 72K to 88K, reflecting steady growth.

Tesla remained the smallest in scale, with revenue ranging from 81K to 98K, and net income between 7K and 15K, showcasing growth potential but with significant earnings variability.

Strategic Insights

Apple leads in overall revenue and profitability, backed by consistent performance and strong margins.

Microsoft reflects operational stability and effective revenue-to-profit conversion, particularly in 2024.

Tesla while dynamic in growth, displays financial volatility—suggesting a need for better cost controls and margin management to achieve sustainable profitability.