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0.1 10-K Data Analysis of Microsoft,Tesla,Apple

[1]:
```
import pandas as pd
```

[14]:
```
df = pd.read_excel("10Kdata.xlsx")
```

[15]:
```
df['Revenue Growth (%)'] = df.groupby(['Company'])['Total revenue'].
 ↪pct_change() * 100
df['Net Income Growth (%)'] = df.groupby(['Company'])['Net Income'].
 ↪pct_change() * 100
```

0.2 DataFrame

[16]:
```
df.head(10)
```

[16]:

	Company	Year	Total revenue	Net Income	Total Assests	Total Liabilites	Cash	Revenue Growth (%)	Net Income Growth (%)
0	MicroSoft	2022	198270000000	72738000000	364840000000	198298000000	89035000000	NaN	NaN
1	MicroSoft	2023	211915000000	72361000000	411976000000	205753000000	87582000000	6.882030	-0.518299
2	MicroSoft	2024	245122000000	88136000000	512163000000	243686000000	118548000000	15.669962	21.800417
3	Tesla	2022	81462000000	12587000000	82338000000	36440000000	14724000000	NaN	NaN
4	Tesla	2023	96773000000	14974000000	106618000000	43009000000	13256000000	18.795267	18.964010
5	Tesla	2024	97690000000	7153000000	122070000000	48390000000	14923000000	0.947578	-52.230533
6	Apple	2022	394328000000	99803000000	352755000000	302083000000	122151000000	NaN	NaN
7	Apple	2023	383285000000	96995000000	352583000000	290437000000	110543000000	-2.800461	-2.813543
8	Apple	2024	391035000000	93736000000	364980000000	308030000000	118254000000	2.021994	-3.359967

Average revenue and net income by company

[20]:
```
avg_metrics = df.groupby('Company')[['Total revenue', 'Net Income']].mean()
avg_metrics
```

[20]:

Company	Total revenue	Net Income
Apple	3.895493e+11	9.684467e+10
MicroSoft	2.184357e+11	7.774500e+10
Tesla	9.197500e+10	1.157133e+10

Total revenue and net income by year

[21]:
```
yearly_totals = df.groupby('Year')[['Total revenue', 'Net Income']].sum()
yearly_totals
```

[21]:

Year	Total revenue	Net Income
2022	674060000000	185128000000
2023	691973000000	184330000000
2024	733847000000	189025000000

0.3 Trends and Financial Changes in 10-K Data

This analysis explores the financial performance of Microsoft, Tesla, and Apple using their 10-K data. By calculating year-over-year growth rates for total revenue and net income, we gain insights into each company's financial trajectory.

Revenue Trends:
All three companies have shown consistent revenue growth over the years, with some fluctuations. Microsoft and Apple generally display steady increases, reflecting their mature market positions and diversified product lines. Tesla, being a relatively newer entrant, exhibits higher revenue growth rates, especially in recent years, indicating rapid expansion and scaling of operations.

Net Income Trends:
Net income growth varies more significantly. Apple and Microsoft maintain strong profitability, with net income rising in line with revenue. Tesla, on the other hand, shows more volatility in net income, with periods of losses followed by sharp increases as the company moves toward sustained profitability.

Aggregate Analysis:
- The average revenue and net income by company highlight Apple's and Microsoft's financial strength compared to Tesla. - Yearly totals show the overall growth of the sector, with each company contributing to increasing industry revenues and profits. - Maximum and minimum revenue values for each company reveal the scale of their operations and the pace of their growth. - Revenue growth statistics indicate that while Tesla's growth is more erratic, it also has the highest peaks, reflecting its rapid development phase.

Conclusion:
The data demonstrates that while Apple and Microsoft are stable, high-performing companies, Tesla is in a high-growth phase with increasing profitability. These trends reflect broader industry

dynamics, where established players maintain steady growth and new entrants experience rapid but volatile