

Financial Statement Analysis with Apple and Microsoft Company

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FIN520: Financial Reporting and Analysis

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March 10, 2024

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Financial Statement Analysis

Financial statement analysis is a process of evaluating a company's financial performance and position using various techniques and tools. It can help investors, creditors, managers, and other stakeholders to make informed decisions about the company's operations, profitability, liquidity, solvency, and valuation.

This paper compares the financial performance of two leading technology companies, Apple and Microsoft, in the same industry. It uses its financial statements from 2021 to 2023 and analyzes various indicators, such as revenue, earnings, margins, growth, cash flow, assets, liabilities, equity, and ratios. Analysis reveals each company's strengths and weaknesses as well as the opportunities and threats it faces in the competitive market.

To perform this analysis, we need to collect the financial statements of both companies from their annual reports or other reliable sources. Then, the data will be processed using horizontal, vertical, and ratio analysis. Horizontal analysis compares the changes in each line item over time, such as the percentage change in revenue or net income from year to year. Vertical analysis shows the proportion of each line item to a joint base, such as the cost of goods sold to revenue or the percentage of total assets to total liabilities. Ratio analysis calculates various ratios that measure the company's performance, such as profitability, liquidity, turnover, and solvency ratios.

After processing the data, analyze and interpret the results by looking for trends, patterns, strengths, weaknesses, opportunities, and threats. Also, consider the industry benchmarks, the economic environment, the competitive landscape, and the company's strategies and goals. Look for similarities and differences between the two companies and explain their reasons. Identify the key drivers and risks that affect the company's performance and value.

Finally, it develops and communicates our conclusions and recommendations based on the result of the analysis. Then, summarize the main findings and implications of data analysis and provide our opinion on the company's financial health and attractiveness. Suggest some actions or strategies the company can take to improve its performance or address its challenges—support analyst conclusions and recommendations with relevant evidence and logical arguments.

Executive Summary

Apple and Microsoft are leading technology companies producing software, hardware, and online services. They operate in various segments: personal computing, mobile devices, cloud computing, gaming, entertainment, and artificial intelligence. They have a global presence and reach, with operations in over 100 countries and millions of customers and users. (Novet,2024).

Apple

Apple is the most valuable brand in the world and the seventh largest by revenue. The company develops and supports software, services, devices, and solutions for various markets and customers. The company operates through three business segments: Productivity and Business Processes, Intelligent Cloud, and More Personal Computing. Apple's mission is to empower every person and every organization on the planet to achieve more.

In the fiscal year 2020, Apple reported revenue of \$274.5 billion, an increase of 5.5% from the previous year, and net income of \$57.4 billion, a decrease of 7.4%. The company's growth was driven by solid performance in its services and wearable businesses, such as the iPhone, iPad, Mac, Apple Watch, AirPods, Apple TV, and HomePod. It also offers various services, such as the App Store, Apple Music, Apple Pay, iCloud, Apple Arcade, Apple TV+, and Apple Fitness+.

Apple's vision is to create innovative products and services that enable its customers to achieve more in a rapidly changing world. The company invests heavily in research, development, and social and environmental initiatives to advance its technology, culture, and impact. Apple's goals include expanding its global reach, enhancing its customer experience, increasing its social responsibility, and fostering its corporate governance. (Vlastelica&Bass,2021).

Microsoft

Microsoft is a leading technology company that develops and supports software, services, devices, and solutions for various markets and customers. The company operates through three business segments: Productivity and Business Processes, Intelligent Cloud, and More Personal Computing. Microsoft is known for its dominant and diverse software portfolio, which includes Windows, Office, Azure, Dynamics, Teams, Outlook, OneDrive, Skype, LinkedIn, and Bing. It also produces hardware, such as Surface, Xbox, HoloLens, and Microsoft Mouse. Microsoft's mission is to empower every person and every organization on the planet to achieve more. (Soni,2024).

In the fiscal year 2020, Microsoft reported revenue of \$143.0 billion, an increase of 14% from the previous year, and net income of \$44.3 billion, an increase of 13%. The company's growth was driven by solid performance in its cloud-based services, such as Azure, Office 365, and Dynamics 365, as well as its gaming and devices businesses, such as Xbox and Surface. Microsoft also made strategic acquisitions, such as Nuance and GitHub, to enhance its capabilities and offerings in artificial intelligence, speech recognition, and software development.

Microsoft's vision is to create innovative products and services that enable its customers to achieve more in a rapidly changing world. The company invests heavily in research,

development, and social and environmental initiatives to advance its technology, culture, and impact. Microsoft's goals include expanding its cloud leadership, empowering every developer, creating new categories of devices, and building trust and responsibility in technology.

Apple and Microsoft's Financial Statement

Financial statement analysis is the process of examining and evaluating the financial information of a company or organization. It involves using various tools and techniques to measure and compare a company's performance, liquidity, efficiency, and valuation over time or with other companies. The research provides an overview of five crucial financial analysis tools: Comparative financial statement analysis, Ratio Calculation, Ratio Analysis, projected financial statements, and valuation. (Subramanyam, 2007). The research contains a comparison of Apple's and Microsoft's financial statements. Financial statement analysis can help investors, creditors, managers, and other stakeholders make informed decisions about a company's economic health and prospects.

The main types of financial statements are documents that provide information about a company's financial performance and position. They include the income statement, the balance sheet, and the statement of cash flows. The income statement shows the company's revenue, expenses, and net income. The balance sheet shows the company's assets, liabilities, and equity at a given time. The statement of cash flows shows the company's sources and uses of cash for a given period.

Apple and Microsoft are leading technology companies producing software, hardware, and online services. They publish their financial statements in annual reports, websites, or other reliable sources.

Apple Financial Statements since 2021

Figure 1: Apple's Income Statement 2021-2023 | AAPL. (Note: Table from [macrotrends.com](https://www.macrotrends.com))




















Annual Data Millions of US \$ except per share data		2023-09-30	2022-09-30	2021-09-30
Revenue		\$383,285	\$394,328	\$365,817
Cost Of Goods Sold		\$214,137	\$223,546	\$212,981
Gross Profit		\$169,148	\$170,782	\$152,836
Research And Development Expenses		\$29,915	\$26,251	\$21,914
SG&A Expenses		\$24,932	\$25,094	\$21,973
Other Operating Income Or Expenses		-	-	-
Operating Expenses		\$54,847	\$51,345	\$43,887
Operating Income		\$114,301	\$119,437	\$108,949
Total Non-Operating Income/Expense		\$-565	\$-334	\$258
Pre-Tax Income		\$113,736	\$119,103	\$109,207
Income Taxes		\$16,741	\$19,300	\$14,527
Income After Taxes		\$96,995	\$99,803	\$94,680
Other Income		-	-	-
Income From Continuous Operations		\$96,995	\$99,803	\$94,680
Income From Discontinued Operations		-	-	-
Net Income		\$96,995	\$99,803	\$94,680
EBITDA		\$125,820	\$130,541	\$120,233
EBIT		\$114,301	\$119,437	\$108,949
Basic Shares Outstanding		15,744	16,216	16,701
Shares Outstanding		15,813	16,326	16,865
Basic EPS		\$6.16	\$6.15	\$5.67
EPS - Earnings Per Share		\$6.13	\$6.11	\$5.61

Figure 2: Apple's Balance Sheet 2021-2023 | AAPL. (Note: Table from [macrotrends.com](https://www.macrotrends.com))






















Annual Data Millions of US \$ except per share data		2023-09-30	2022-09-30	2021-09-30
Cash On Hand		\$61,555	\$48,304	\$62,639
Receivables		\$60,985	\$60,932	\$51,506
Inventory		\$6,331	\$4,946	\$6,580
Pre-Paid Expenses		-	-	-
Other Current Assets		\$14,695	\$21,223	\$14,111
Total Current Assets		\$143,566	\$135,405	\$134,836
Property, Plant, And Equipment		\$43,715	\$42,117	\$39,440
Long-Term Investments		\$100,544	\$120,805	\$127,877
Goodwill And Intangible Assets		-	-	-
Other Long-Term Assets		\$64,758	\$54,428	\$48,849
Total Long-Term Assets		\$209,017	\$217,350	\$216,166
Total Assets		\$352,583	\$352,755	\$351,002
Total Current Liabilities		\$145,308	\$153,982	\$125,481
Long Term Debt		\$95,281	\$98,959	\$109,106
Other Non-Current Liabilities		\$49,848	\$49,142	\$53,325
Total Long Term Liabilities		\$145,129	\$148,101	\$162,431
Total Liabilities		\$290,437	\$302,083	\$287,912
Common Stock Net		\$73,812	\$64,849	\$57,365
Retained Earnings (Accumulated Deficit)		\$-214	\$-3,068	\$5,562
Comprehensive Income		\$-11,452	\$-11,109	\$163
Other Share Holders Equity		-	-	-
Share Holder Equity		\$62,146	\$50,672	\$63,090
Total Liabilities And Share Holders Equity		\$352,583	\$352,755	\$351,002

Figure 3: Apple's Cash Flow Statement 2021-2023| AAPL. (Note: Table from [macrotrends.com](https://www.macrotrends.com))

Annual Data Millions of US \$ except per share data		2023-09-30	2022-09-30	2021-09-30
Net Income/Loss		\$96,995	\$99,803	\$94,680
Total Depreciation And Amortization - Cash Flow		\$11,519	\$11,104	\$11,284
Other Non-Cash Items		\$8,606	\$10,044	\$2,985
Total Non-Cash Items		\$20,125	\$21,148	\$14,269
Change In Accounts Receivable		\$-1,688	\$-1,823	\$-10,125
Change In Inventories		\$-1,618	\$1,484	\$-2,642
Change In Accounts Payable		\$-1,889	\$9,448	\$12,326
Change In Assets/Liabilities		\$-1,382	\$-7,909	\$-4,470
Total Change In Assets/Liabilities		\$-6,577	\$1,200	\$-4,911
Cash Flow From Operating Activities		\$110,543	\$122,151	\$104,038
Net Change In Property, Plant, And Equipment		\$-10,959	\$-10,708	\$-11,085
Net Change In Intangible Assets		-	-	-
Net Acquisitions/Divestitures		-	-	-
Net Change In Short-term Investments		\$16,001	\$-9,560	\$-3,075
Net Change In Long-Term Investments		-	-	-
Net Change In Investments - Total		\$16,001	\$-9,560	\$-3,075
Investing Activities - Other		\$-1,337	\$-2,086	\$-385
Cash Flow From Investing Activities		\$3,705	\$-22,354	\$-14,545
Net Long-Term Debt		\$-5,923	\$-4,078	\$11,643
Net Current Debt		\$-3,978	\$3,955	\$1,022
Debt Issuance/Retirement Net - Total		\$-9,901	\$-123	\$12,665
Net Common Equity Issued/Repurchased		\$-77,550	\$-89,402	\$-85,971
Net Total Equity Issued/Repurchased		\$-77,550	\$-89,402	\$-85,971
Total Common And Preferred Stock Dividends Paid		\$-15,025	\$-14,841	\$-14,467
Financial Activities - Other		\$-6,012	\$-6,383	\$-5,580
Cash Flow From Financial Activities		\$-108,488	\$-110,749	\$-93,353
Net Cash Flow		\$5,760	\$-10,952	\$-3,860
Stock-Based Compensation		\$10,833	\$9,038	\$7,906
Common Stock Dividends Paid		\$-15,025	\$-14,841	\$-14,467

Microsoft Financial Statements since 2021

Figure 4: Microsoft's Income Statement 2021-2023 | MSFT. (Note: Table from [macrotrends.com](https://www.macrotrends.com))

Annual Data Millions of US \$ except per share data		2023-06-30	2022-06-30	2021-06-30
Revenue		\$211,915	\$198,270	\$168,088
Cost Of Goods Sold		\$65,863	\$62,650	\$52,232
Gross Profit		\$146,052	\$135,620	\$115,856
Research And Development Expenses		\$27,195	\$24,512	\$20,716
SG&A Expenses		\$30,334	\$27,725	\$25,224
Other Operating Income Or Expenses		-	-	-
Operating Expenses		\$57,529	\$52,237	\$45,940
Operating Income		\$88,523	\$83,383	\$69,916
Total Non-Operating Income/Expense		\$788	\$333	\$1,186
Pre-Tax Income		\$89,311	\$83,716	\$71,102
Income Taxes		\$16,950	\$10,978	\$9,831
Income After Taxes		\$72,361	\$72,738	\$61,271
Other Income		-	-	-
Income From Continuous Operations		\$72,361	\$72,738	\$61,271
Income From Discontinued Operations		-	-	-
Net Income		\$72,361	\$72,738	\$61,271
EBITDA		\$102,384	\$97,843	\$81,602
EBIT		\$88,523	\$83,383	\$69,916
Basic Shares Outstanding		7,446	7,496	7,547
Shares Outstanding		7,472	7,540	7,608
Basic EPS		\$9.72	\$9.70	\$8.12
EPS - Earnings Per Share		\$9.68	\$9.65	\$8.05

Figure 5: Microsoft's Balance Sheet 2021-2023 | MSFT. (Note: Table from microtrends.com)

























Annual Data Millions of US \$ except per share data		2023-06-30	2022-06-30	2021-06-30
Cash On Hand		\$111,262	\$104,757	\$130,334
Receivables		\$48,688	\$44,261	\$38,043
Inventory		\$2,500	\$3,742	\$2,636
Pre-Paid Expenses		-	-	-
Other Current Assets		\$21,807	\$16,924	\$13,393
Total Current Assets		\$184,257	\$169,684	\$184,406
Property, Plant, And Equipment		\$95,641	\$74,398	\$59,715
Long-Term Investments		\$9,879	\$6,891	\$5,984
Goodwill And Intangible Assets		\$77,252	\$78,822	\$57,511
Other Long-Term Assets		\$30,601	\$21,897	\$15,075
Total Long-Term Assets		\$227,719	\$195,156	\$149,373
Total Assets		\$411,976	\$364,840	\$333,779
Total Current Liabilities		\$104,149	\$95,082	\$88,657
Long Term Debt		\$41,990	\$47,032	\$50,074
Other Non-Current Liabilities		\$43,541	\$41,595	\$40,617
Total Long Term Liabilities		\$101,604	\$103,216	\$103,134
Total Liabilities		\$205,753	\$198,298	\$191,791
Common Stock Net		\$93,718	\$86,939	\$83,111
Retained Earnings (Accumulated Deficit)		\$118,848	\$84,281	\$57,055
Comprehensive Income		\$-6,343	\$-4,678	\$1,822
Other Share Holders Equity		-	-	-
Share Holder Equity		\$206,223	\$166,542	\$141,988
Total Liabilities And Share Holders Equity		\$411,976	\$364,840	\$333,779

Figure 6: Microsoft Cash Flow Statement 2021-2023 |MSFT. (Note: Table from [macrotrends.com](https://www.macrotrends.com))

Annual Data Millions of US \$ except per share data		2023-06-30	2022-06-30	2021-06-30
Net Income/Loss		\$72,361	\$72,738	\$61,271
Total Depreciation And Amortization - Cash Flow		\$13,861	\$14,460	\$11,686
Other Non-Cash Items		\$9,283	\$6,500	\$9,352
Total Non-Cash Items		\$23,144	\$20,960	\$21,038
Change In Accounts Receivable		\$-4,087	\$-6,834	\$-6,481
Change In Inventories		\$1,242	\$-1,123	\$-737
Change In Accounts Payable		\$-2,721	\$2,943	\$2,798
Change In Assets/Liabilities		\$-1,999	\$-345	\$1,160
Total Change In Assets/Liabilities		\$-7,923	\$-4,663	\$-5,569
Cash Flow From Operating Activities		\$87,582	\$89,035	\$76,740
Net Change In Property, Plant, And Equipment		\$-28,107	\$-23,886	\$-20,622
Net Change In Intangible Assets		-	-	-
Net Acquisitions/Divestitures		\$-1,670	\$-22,038	\$-8,909
Net Change In Short-term Investments		-	-	-
Net Change In Long-Term Investments		\$10,213	\$18,438	\$2,876
Net Change In Investments - Total		\$10,213	\$18,438	\$2,876
Investing Activities - Other		\$-3,116	\$-2,825	\$-922
Cash Flow From Investing Activities		\$-22,680	\$-30,311	\$-27,577
Net Long-Term Debt		\$-2,750	\$-9,023	\$-3,750
Net Current Debt		-	-	-
Debt Issuance/Retirement Net - Total		\$-2,750	\$-9,023	\$-3,750
Net Common Equity Issued/Repurchased		\$-20,379	\$-30,855	\$-25,692
Net Total Equity Issued/Repurchased		\$-20,379	\$-30,855	\$-25,692
Total Common And Preferred Stock Dividends Paid		\$-19,800	\$-18,135	\$-16,521
Financial Activities - Other		\$-1,006	\$-863	\$-2,523
Cash Flow From Financial Activities		\$-43,935	\$-58,876	\$-48,486
Net Cash Flow		\$20,773	\$-293	\$648
Stock-Based Compensation		\$9,611	\$7,502	\$6,118
Common Stock Dividends Paid		\$-19,800	\$-18,135	\$-16,521

Comparative Financial Statement Analysis in Apple and Microsoft

Comparative financial statement analysis compares a company's financial statements over different periods or with other companies to evaluate its performance, trends, and position. Comparative financial statement analysis has some steps, such as horizontal and vertical analysis.

Horizontal analysis

This is the analysis of the changes in the financial statements over time. It involves calculating the percentage change in each item of the financial statements from one period to another. Horizontal analysis can help identify the trends, growth rates, and patterns of a company's performance. To perform a horizontal analysis of Apple's and Microsoft's income statements for the last three years using the data from Figure 1 and Figure 4.

Figure 7: Result of horizontal analysis for Apple Inc.

Horizontal Analysis for Apple Inc.						
Annual Data in millions except number of shares, which is reflected in thousands, and per-share amounts						
Financial Ratio	2023	2022	2021	Percentage Change 22-23	Percentage Change 21-22	CAGR 2021-2023
Revenue	\$ 383,285.00	\$ 394,328.00	\$ 365,812.00	-2.88%	7.23%	1.57%
Gross Profit	\$ 169,148.00	\$ 170,782.00	\$ 152,836.00	-0.97%	10.51%	3.44%
Net Income	\$ 96,995.00	\$ 99,803.00	\$ 94,680.00	-2.89%	5.13%	0.81%
Earning per share (EPS)	\$ 6.13	\$ 6.11	\$ 5.61	0.33%	8.18%	3.00%

Revenue: Revenue decreased by 2.80% from 2022 to 2023 but increased by 7.23% from 2021 to 2022. The CAGR of revenue from 2021 to 2023 was 1.57%. This shows that Apple's revenue growth slowed in 2023 but remained optimistic over the three years.

Gross Profit: Gross profit decreased by 0.97% from 2022 to 2023 but increased by 10.51% from 2021 to 2022. The CAGR of gross profit from 2021 to 2023 was 3.44%.

Net Income: Net income decreased by 2.89% from 2022 to 2023 but increased by 5.13% from 2021 to 2022. The CAGR of net income from 2021 to 2023 was 0.81%. This shows that Apple's

net income growth was modest over the three years, and its net profit margin remained around 25%.

EPS (Diluted): EPS (diluted) increased by 0.33% from 2022 to 2023 and 8.18% from 2021 to 2022. The CAGR of EPS (diluted) from 2021 to 2023 was 3.00%. This shows that Apple's EPS growth outpaced its net income growth, mainly due to the reduction in the number of shares outstanding.

Figure 8: Result of horizontal analysis for Microsoft Inc.

Horizontal Analysis for Microsoft Inc.						
Annual Data in millions expect number of shares, which is reflected in thousands, and per-share amounts						
Financial Ratio	2023	2022	2021	Percentage Change 22-23	Percentage Change 21-22	CAGR 2021-2023
Revenue	\$ 211,915.00	\$ 198,270.00	\$ 168,088.00	6.44%	15.22%	8.03%
Gross Profit	\$ 146,052.00	\$ 135,620.00	\$ 115,856.00	7.14%	14.57%	8.03%
Net Income	\$ 72,361.00	\$ 72,738.00	\$ 61,271.00	-0.52%	15.76%	5.70%
Earning per share (EPS)	\$ 9.68	\$ 9.65	\$ 8.05	0.31%	16.58%	6.34%

Revenue increased by 6.44% from 2022 to 2023 and 15.22% from 2021 to 2022, with a CAGR of 8.03% from 2021 to 2023. This shows that Microsoft's revenue grew positively over the three years.

Gross Profit: Gross profit increased by 7.14% from 2022 to 2023 and 14.57% from 2021 to 2022, resulting in a CAGR of 8.03%.

Net Income: Net income decreased by 0.52% from 2022 to 2023 but increased by 15.76% from 2021 to 2022. The CAGR of net income from 2021 to 2023 was 5.70%. This shows that Microsoft's net income growth was modest over the three years.

EPS (Diluted): EPS (diluted) increased by 0.31% from 2022 to 2023, and the company's profitability per outstanding share improved slightly during this period and by 16.58% from 2021 to 2022 as this indicates substantial growth in profitability per share during that year. The CAGR of EPS (diluted) from 2021 to 2023 was 6.34%, and the CAGR provides an average annual

growth rate, considering the fluctuations over the three years. In summary, Microsoft's earnings per share (diluted) showed consistent growth, with a minor increase from 2022 to 2023 compared to the significant jump from 2021 to 2022. The overall trend indicates positive performance in terms of profitability per share.

Vertical analysis

This is the analysis of the proportion of each item in the financial statements to a joint base. It involves calculating the percentage of each item to the total revenue in the income statement or to the total assets or liabilities in the balance sheet. Vertical analysis can help compare the composition and structure of a company's financial statements. To perform vertical analysis on Apple's balance sheet and Microsoft's balance sheet for the last three years using the data from Figure 2 and Figure 5, so calculate the percentage of each item to the total assets in the balance sheet for each year.

Figure 9: The results of the vertical analysis of Apple's balance sheet.

Vertical Analysis for Apple Inc.			
Financial Ratio	2023	2022	2021
Cash and Cash Equivalents	8.50%	6.70%	4.05%
Property, Plant and Equipment	12.40%	11.94%	11.25%
Total Liabilities	82.37%	85.64%	82.03%
Total Equity	17.63%	14.36%	17.97%

Cash and Cash Equivalents: Cash and cash equivalents accounted for 8.50% of the total assets in 2023, 6.70% in 2022, and 4.05% in 2021. This shows that Apple maintained a high level of liquidity over the three years and slightly increased its cash position in 2023.

Property, Plant, and Equipment: Property, plant, and equipment accounted for 12.40% of the total assets in 2023, 11.94% in 2022, and 11.25% in 2021. This shows that Apple's investment in fixed assets remained relatively stable over the three years and slightly decreased in 2023.

Total Liabilities: Total liabilities accounted for 82.37% of the total assets in 2023, 85.64% in 2022, and 82.03% in 2021. This shows that Apple's leverage ratio slightly decreased in 2023. Apple has high leverage or uses borrowed funds to finance its operations. A high leverage ratio can indicate that a company can generate more returns from its assets, but it also implies a higher risk of default or insolvency.

Total Equity: By 2023, the total equity rebounded to 17.63%. This indicates a recovery or improvement in the equity position. It's essential to consider the context— Apple could raise additional capital, repurchase shares, or experience changes in retained earnings during this period. In 2022, the proportion of total equity decreased to 14.36%. This decline suggests that the company's equity base shrank relative to its total assets or other liabilities (such as debt) increased. A lower equity percentage may raise concerns about financial risk and leverage. In 2021, the total equity accounted for 17.97% of the company's balance sheet. This means approximately 17.97% of Apple's assets were financed by equity (shareholder investments and retained earnings). A higher percentage indicates a more substantial equity base, which can favor the company's financial stability.

Figure 10: The results of the vertical analysis of Microsoft's balance sheet.

Vertical Analysis for Microsoft			
Financial Ratio	2023	2022	2021
Cash and Cash Equivalents	8.42%	3.82%	5.15%
Property, Plant and Equipment	23.22%	20.39%	17.89%
Total Liabilities	49.94%	54.35%	57.46%
Total Equity	50.06%	45.65%	42.54%

Cash and Cash Equivalents: Cash and cash equivalents accounted for 8.42% of the total assets in 2023. Microsoft's increase indicates improved liquidity, potentially due to increased cash reserves or efficient management of working capital, so a higher percentage indicates more

robust liquidity. 3.82% in 2022, this decline suggests either a reduction in available cash or an expansion of other asset categories and 5.15% in 2021 reflects the liquidity position—the proportion of readily available funds relative to the overall asset base.

Property, Plant, and Equipment: The result of the property, plant, and equity percentage increased by 23.22% in 2023, decreased by 20.39% in 2022, the lower amount of 17.89% in 2021. PP&E percentage slightly increased, and Microsoft has invested more in tangible assets such as buildings, machinery, and equipment. A higher PP&E percentage suggests a commitment to long-term infrastructure and operational capabilities.

Total Liability: Microsoft's total liabilities decreased to approximately 49.94% in 2023, 54.35% in 2022, and 57.46% in 2021. The trend indicates a declining total liabilities as a percentage of total assets in the three years. Lower total liabilities can be favorable, reflecting reduced financial risk and debt burden.

Total Equity: Microsoft's total equity decreased to approximately 50.06% in 2023, 45.65% in 2022, and 50.06% in 2021. The upper trend in total equity percentage indicates that Microsoft has strengthened its equity base. A higher equity percentage is generally favorable, as it signifies a stronger financial position and greater shareholder ownership.

Ratio Calculation

Financial ratios are numerical calculations that illustrate the relationship between one piece or group of data and another. They are used to evaluate a company's financial health, performance, and growth potential by comparing different aspects of its financial statements, such as the balance sheet and income statement. There are many financial ratios; this paper uses working capital, current ratio, total debt to equity ratio, time interest earned, RNOA, and ROCE.

Working Capital

Working capital is a financial metric that shows how much money a company has to pay its short-term expenses and invest in its growth. It represents the difference between a company's current assets (such as cash, accounts receivable, and inventories) and its current liabilities (such as accounts payable and debts). Positive working capital ensures the company can handle short-term debts, operating expenses, and unexpected challenges. Negative working capital indicates potential liquidity issues. The formula for working capital:

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

Figure 11: The Excel table shows the result of the working capital ratio for Apple Inc. 2023, 2022, and 2021.

Working Capital for Apple 2023, 2022, and 2021			
Annual Data in millions expect number of shares, which is reflected in thousands, and per-share amounts			
Apple Inc	2023	2022	2021
Current Assets	\$ 143.566	\$ 135.404	\$ 134.836
Current Liabilities	\$ 145.308	\$ 153.982	\$ 125.481
Working Capital	\$ (1.742)	\$ (18.578)	\$ 9.355

Figure 12: Excel table indicates Microsoft's working capital ratio for 2023, 2022, and 2021.

Working Capital for Microsoft 2023, 2022, and 2021			
Annual Data in millions expect number of shares, which is reflected in thousands, and per-share amounts			
Microsoft	2023	2022	2021
Current Assets	\$ 184.257	\$ 169.684	\$ 184.406
Current Liabilities	\$ 104.149	\$ 95.082	\$ 88.657
Working Capital	\$ 80.108	\$ 74.602	\$ 95.749

Current Ratio

The current ratio is a financial metric that assesses a company's ability to meet its short-term obligations—those due within one year. It provides insights into how effectively a company can use its current assets (such as cash, accounts receivable, and inventory) to cover its current

liabilities (such as accounts payable, short-term debts, and taxes). A current ratio greater than 1.00 indicates that the company has sufficient resources to meet its short-term obligations. Conversely, a current ratio below 1.00 suggests that the company may not have enough capital to cover all its short-term debts simultaneously. Ideally, a company's current ratio should align with the industry average or slightly higher. A significantly higher current ratio may indicate inefficiency in using assets, while a lower ratio could signal higher risk. Snapshot vs. Remember that the current ratio provides a snapshot of a company's liquidity at a specific moment. It doesn't fully represent long-term solvency or overall financial health.

The current ratio helps investors and analysts compare a company's short-term financial position with peers. It's a valuable tool for understanding liquidity and risk. The formula for calculating the current ratio:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Figure 13: Excel table showing the result of Apple Inc.'s current ratio for 2023, 2022, and 2021.

Current Ratio for Apple 2023, 2022, and 2021			
Annual Data in millions except number of shares, which is			
Apple Inc	2023	2022	2021
Current Assets	\$ 143.566	\$ 135.404	\$ 134.836
Current Liabilities	\$ 145.308	\$ 153.982	\$ 125.481
Current Ratio	0.99	0.88	1.07

Figure 14: The Excel table reveals Microsoft's current ratio results for the years 2023, 2022, and 2021.

Current Ratio for Microsoft 2023, 2022, and 2021			
Annual Data in millions except number of shares, which is			
Microsoft	2023	2022	2021
Current Assets	\$ 184.257	\$ 169.684	\$ 184.406
Current Liabilities	\$ 104.149	\$ 95.082	\$ 88.657
Current Ratio	1.77	1.78	2.08

Total Debt to Equity

The debt-to-equity (D/E) ratio is a financial metric to evaluate a company's financial leverage. It compares a company's total liabilities (which represent its debts) to its shareholder equity (the owners' investment in the company). A higher D/E ratio indicates that a company relies more on debt financing. A lower D/E ratio suggests that a company uses more equity capital to fund its operations. The ideal D/E ratio varies by industry, but a moderate ratio is generally preferred. A high D/E ratio may indicate higher financial risk because the company has significant debt obligations. It could lead to difficulties repaying debts during economic downturns or interest rate hikes.

Investors consider the D/E ratio when assessing a company's stability and risk. A company with a reasonable D/E ratio may be better positioned for growth and investment. Compare a company's D/E ratio to industry peers to understand its relative financial structure. Some industries (like utilities) tend to have higher D/E ratios due to their capital-intensive nature. The D/E ratio doesn't consider the quality of debt (e.g., long-term vs. short-term) or the interest rates. Analyzing other financial metrics alongside the D/E ratio for a comprehensive view is essential. The D/E ratio helps assess a company's financial risk, capital structure, and reliance on debt. The formula for calculating debt to equity (D/E) ratio:

$$\text{Debt/ Equity} = \frac{\text{Total Liabilities}}{\text{Total Shareholders' Equity}}$$

Figure 15: Excel table shows Apple Inc.'s debt-to-equity ratio for 2023, 2022, and 2021.

Debt to Equity Ratio for Apple 2023, 2022, and 2021			
Annual Data in millions expect number of shares, which is reflected in			
Apple Inc	2023	2022	2021
Total Liabilities	\$ 290,437.0	\$ 302,083.0	\$ 287,912.0
Total Shareholders' Equity	\$ 62,146.0	\$ 50,672.0	\$ 63,090.0
Debt/Equity	4.67	5.96	4.56

Figure 16: The result of Microsoft's Debt to Equity for 2023, 2022, and 2021.

Debt to Equity Ratio for Microsoft 2023, 2022, and 2021			
Annual Data in millions expect number of shares, which is reflected in			
Microsoft	2023	2022	2021
Total Liabilities	\$ 205,753.00	\$ 198,298.00	\$ 191,791.00
Total Shareholder's Equity	\$ 206,223.00	\$ 166,542.00	\$ 141,988.00
Debt/Equity	1.00	1.19	1.35

Times Interest Earned (TIE) Ratio

The interest coverage ratio measures how well a company can meet its interest-payment obligations based on its current income. The TIE ratio is calculated by dividing earnings before interest and taxes (EBIT) by the total interest payable on bonds and other debt. A higher TIE ratio indicates a company has enough cash flow after paying its debts to continue investing in the business. It suggests relative freedom from the constraints of debt. Generating enough cash flow to invest in the company is better than having enough money to stave off bankruptcy.

In summary, the company struggles to meet its debt when the TIE ratio is between 0.9 to 1 (e.g., 0.75). That is, EBIT is less than the company's interest expenses. A higher ratio signifies better financial health regarding liquidity and debt management. The TIE formula for calculating:

$$\text{Times Interest Earned} = \frac{\text{Earning Before Interest and Taxes}}{\text{Interest Expense}}$$

Figure 17: Result of times interest earned for Apple Inc. in 2023, 2022, and 2021.

Times Interest Earned Ratio for Apple 2023, 2022, and 2021			
Annual Data in millions expect number of shares, which is reflected in thousands,			
Apple Inc	2023	2022	2021
Earning Before Interest and Tax	\$ 114,301.0	\$ 119,437.0	\$ 108,949.0
Interest Expence	\$ 3,933.0	\$ 2,931.0	\$ 2,645.0
TIE Ratio	29.06	40.75	41.19

Figure 18: Microsoft's 2023, 2022, and 2021 TIE ratios.

Times Interest Earned Ratio for Microsoft 2023, 2022, and 2021			
Annual Data in millions expect number of shares, which is reflected in			
Microsoft	2023	2022	2021
Earning Before Interest and Tax	\$ 88,523.00	\$ 83,383.00	\$ 69,916.00
Interest Expence	\$ 1,968.00	\$ 2,063.00	\$ 2,346.00
TIE Ratio	44.98	40.42	29.80

Return on Net Operating Assets (RNOA)

RNOA is a financial ratio that measures how efficiently a business utilizes its operating assets to generate profits. It provides insights into the relationship between net income and the company's operational efficiency. NOA refers to the assets directly involved in business operations. It's calculated as the difference between operating assets and operating liabilities. Operating assets used in business operations to generate revenue. Examples include cash, inventory, trade receivables, property, plant, equipment, and other intangible assets needed for operations. Operating Liabilities are short-term liabilities necessary for day-to-day operations. Examples include trade payables, accrued liabilities, and income tax liabilities.

RNOA assesses a company's profitability based on its operating assets and liabilities. It's a valuable metric for investors and analysts. A higher RNOA indicates efficient utilization of operating assets. It reflects the company's ability to generate income from its resources. Comparing RNOA across companies or industries helps evaluate management effectiveness. The RNOA formulates the following:

$$\text{RNOA} = \frac{\text{NOPAT}}{\text{Average NOA}}$$

$$\text{NOPAT} = \text{Operating profit} * (1 - \text{Tax Rate})$$

$$\text{NOA} = \text{Operating Assets} - \text{Operating Liabilities}$$

Figure 19: Excel table indicates Apple Inc.'s Return on Net Operating Assets Ratio for 2023, 2022, and 2021.

Return on Net Operating Assets Ratio for Apple 2023, 2022, and 2021			
Annual Data in millions expect number of shares, which is reflected in thousands, and per-			
Apple Inc	2023	2022	2021
Operating Profit (operating Income)	\$ 114,301.0	\$ 119,437.0	\$ 108,949.0
Operating Assets (total Assets)	\$ 352,583.0	\$ 352,755.0	\$ 351,002.0
Operating Liabilities (total Liability)	\$ 290,437.0	\$ 302,083.0	\$ 287,912.0
Tax Rate	14.70%	16.20%	13.30%
Net Operating Profit After Tax (NOPAT)	\$ 97,498.8	\$ 100,088.2	\$ 94,458.8
Net Operating Assets (NOA)	\$ 62,146.0	\$ 50,672.0	\$ 63,090.0
RNOA	157%	198%	150%

Figure 20: The result of Microsoft's Return on Net Operating Assets for years 2023, 2022, and 2021.

Return on Net Operating Assets Ratio for Microsoft 2023, 2022, and 2021			
Annual Data in millions except number of shares, which is reflected in thousands,			
Microsoft	2023	2022	2021
Operating Profit	\$ 88,523.0	\$ 83,383.0	\$ 69,916.0
Operating Assets	\$ 411,976.0	\$ 364,840.0	\$ 33,779.0
Operating Liabilities	\$ 205,753.0	\$ 198,298.0	\$ 191,791.0
Tax Rate	19.00%	13.10%	13.80%
Net Operating Profit After Tax (NOPAT)	\$ 71,703.6	\$ 72,459.8	\$ 60,267.6
Net Operating Assets (NOA)	\$ 206,223.0	\$ 166,542.0	\$ (158,012.0)
RNOA	35%	44%	-38%

Return on Capital Employed (ROCE)

Return on Capital Employed (ROCE) is a financial ratio that assesses how effectively a company uses its capital to generate profits. ROCE measures the return a company generates for each dollar (or other currency unit) employed in its business operations. It considers equity and debt capital, providing a comprehensive view of profitability. A higher ROCE indicates that a company efficiently utilizes capital to generate profits. It reflects the company's ability to turn capital into profit. Comparing ROCE across companies helps assess their relative efficiency. Always compare ROCE within the same industry, as ratios vary significantly across different sectors. Industries with high capital requirements (e.g., utilities) tend to have ROCE levels that are different from tech companies. Investors favor companies with stable and rising ROCE levels. A consistent upward trend suggests better performance. The formula for calculating ROCE is as follows:

$$\text{ROCE} = \frac{\text{Earning before interest and tax (EBIT)}}{\text{Common Stockholders' Equity}}$$

Figure 21: Excel table shows Apple Inc.'s Return on Capital Employed for 2023, 2022, and 2021.

Return on Capital Employed for Apple 2023, 2022, and 2021			
Annual Data in millions except number of shares, which is reflected in thousands, and per-			
Apple Inc	2023	2022	2021
Earning Before Interest and Tax	\$ 114,301.0	\$ 119,437.0	\$ 108,949.0
Total Shareholders' Equity	\$ 62,146.0	\$ 50,672.0	\$ 63,090.0
ROCE	184%	236%	173%

Figure 22: Result of Microsoft's ROCE for 2023, 2022, and 2021.

Return on Capital Employed for Microsoft 2023, 2022, and 2021			
Annual Data in millions except number of shares, which is reflected in thousands,			
Microsoft	2023	2022	2021
Earning Before Interest and Tax	\$ 88,523.00	\$ 83,383.00	\$ 69,916.00
Total Shareholder's Equity	\$ 206,223.00	\$ 166,542.00	\$ 141,988.00
ROCE	43%	50%	49%

Ratio Analyst

Apple Inc.'s Ratio Analyst

Working capital fluctuations for Apple Inc.

These fluctuations highlight Apple's financial position over the three years. Negative working capital in 2023 and 2022 suggests potential liquidity challenges, while positive working capital in 2021 indicates a healthier short-term economic situation. Negative Working Capital (2023 and 2022): When a company's working capital is negative, it means that its current liabilities (short-term obligations) exceed its current assets (liquid resources).

Negative working capital suggests that Apple may struggle to meet its short-term financial obligations promptly. It could face difficulties paying off debts, covering operational expenses, or managing day-to-day cash flow. For example, if Apple has high short-term debt payments due soon, negative working capital might hinder its ability to repay those debts.

While negative working capital isn't always alarming (especially for tech giants like Apple), it warrants close monitoring. Apple's business model, revenue streams, and cash reserves play a significant role in assessing the impact of negative working capital.

In summary, while negative working capital raises concerns, Apple's overall financial strength, brand value, and market position mitigate some risks. However, maintaining a healthy balance between assets and liabilities remains crucial for any company's success.

In 2023 and 2022, Apple had slightly fewer current assets than liabilities, indicating potential short-term liquidity issues. However, in 2021, Apple had more current assets than liabilities, suggesting better short-term financial health.

Apple's Current Ratio Trends:

Apple's current ratio was 0.99 in 2023 and 0.88 in 2022. These ratios indicate that Apple had slightly fewer current assets than current liabilities during those years, suggesting that Apple might have faced challenges in covering immediate obligations. In 2021, Apple's current ratio was 1.07. This means that Apple had more current assets than current liabilities, indicating better short-term financial health and the ability to manage obligations effectively.

TIE Ratio

In 2023, Apple's TIE ratio 29.06 means that its operating income can cover its interest expenses approximately 29 times. The TIE ratio has fluctuated over the years but remains relatively strong. A healthy TIE ratio is crucial for a company's financial stability.

Apple RNOA (Return on Net Operating Assets)

RNOA over the past three years, Apple's RNOA value decreased slightly to 154% for 2023, increased significantly to 198% for 2022, and was 150% for 2021. The substantial increase in RNOA from 150% in 2021 to 198% in 2022 suggests that Company A made significant strides in efficiently utilizing its operating assets to generate profits. This improvement could be due to factors such as better cost management, increased sales, or strategic decisions. Although RNOA

decreased to 154% in 2023, it remains relatively high. This stability indicates that Company A maintained its operational efficiency and continued to generate substantial profits relative to its asset base.

Apple's ROCE (Return on Capital Employed)

The ROCE (Return on Capital Employed) values for the 2023 ROCE decreased slightly to 184% and remained exceptionally high. Monitoring trends and understanding any underlying factors affecting capital utilization is essential. 2022 ROCE increased to 236%. The significant improvement of 236% suggests that the company enhanced its capital efficiency even further. It generated an impressive return on the capital invested. Such high ROCE values are often associated with companies that effectively deploy their assets and generate substantial profits. In 2021, an ROCE of 173% indicates that for every dollar of capital employed (debt and equity), the company generated a return of 1.73 dollars. This is a strong performance, suggesting efficient capital utilization. In summary, consistently high ROCE values indicate that the company efficiently generates profits relative to its capital base.

Microsoft Ratio Analyst

The working capital ratio for Microsoft

Microsoft's working capital ratio indicates a healthier short-term financial situation over the three years and positive working capital in 2023, 2022, and 2021. Microsoft must maintain a healthy working capital balance to ensure operational stability. Positive working capital indicates that Microsoft has more current assets than current liabilities. Microsoft's positive working capital allows flexibility in decision-making. It can invest in research and development, acquisitions, or other strategic initiatives without compromising its financial stability.

Microsoft's Current Ratio Trends

In 2023, Microsoft had slightly fewer current assets than current liabilities. The current ratio of 1.77 indicates that Microsoft could cover its short-term obligations but with a smaller

margin. In 2022, Microsoft had slightly fewer current assets than current liabilities. The current ratio of 1.78 suggests a similar situation to that in 2023. In 2021, Microsoft significantly improved its short-term financial health. The current ratio of 2.08 indicates that Microsoft had more current assets than current liabilities. This suggests better liquidity and the ability to meet short-term obligations comfortably.

In summary, Microsoft's current ratio trends show a positive shift from potential liquidity issues in 2022 and 2023 to improved financial health in 2021. A higher current ratio is generally favorable for short-term stability.

TIE Ratio Analyst

Microsoft's TIE ratio has improved over the years. In 2023, the TIE ratio 44.98 indicates that Microsoft's operating income can cover its interest expenses approximately 44.98 times. The consistent increase in the TIE ratio reflects Microsoft's strong financial position and ability to manage debt obligations.

RNOA (Return on Net Operating Assets)

Microsoft's RNOA value for the last three years decreased to 35% for 2023, increased to 44% for 2022, and was -38% for 2021. A negative RNOA indicates that Microsoft's net operating assets were ineffective in generating profits. It suggests that the company's core operations resulted in losses relative to its asset base. Negative RNOA may result from operational inefficiencies, declining profitability, or mismanagement of assets. The positive shift to 44% for 2022 suggests that Microsoft made significant progress utilizing its operating assets more efficiently. It could be due to cost-cutting measures, improved sales, or strategic changes. While the improvement is positive, further analysis is needed to understand the underlying factors. Although lower than in 2022, a 35% RNOA for 2023 remains positive. This indicates

that Microsoft has continued to generate profits relative to its asset base. Consistent monitoring is crucial to ensure sustained performance.

ROCE (return on Capital Employed)

Microsoft's ROCE (Return on Capital Employed) values across the specified years: 2023 ROCE decrease is minor; a 43% ROCE remains strong. Monitoring trends and understanding any underlying factors affecting capital utilization is essential. In 2022, ROCE increased to 50%.

The slight improvement to 50% suggests that Microsoft utilized its capital efficiently. It generated a slightly better return on the capital invested. Consistency in maintaining a high ROCE is positive. 2021: A ROCE of 49% indicates that for every dollar of capital employed (both debt and equity), Microsoft generated a return of 49 cents. This is a solid performance, suggesting efficient capital utilization.

Company Comparisons

Figure 23: All the ratio results of Apple & Microsoft for 2023, 2022, and 2021.

Company Comparisons Apple&Microsoft 2023, 2022, and 2021						
Annual Data in millions except number of shares, which is reflected in thousands, and per-share amounts						
Ratio	2023		2022		2021	
	Apple	Microsoft	Apple	Microsoft	Apple	Microsoft
Working Capital	\$ (1.742)	\$ 80.108	\$ (18.58)	\$ 74.602	\$ 9.355	\$ 95.749
Current Ratio	0.99	1.77	0.88	1.78	1.07	2.08
Debt/Equity	4.67	1.00	5.96	1.19	4.56	1.35
TIE Ratio	29.06	44.98	40.75	40.42	41.19	29.80
RNOA	1.57	0.35	1.98	0.44	1.50	-0.38
ROCE	1.84	0.43	2.36	0.50	1.73	0.49

Apple Inc. had negative working capital in 2023 and 2022, which indicates liquidity issues. Microsoft has positive working capital and a healthier short-term financial situation: It can comfortably cover its short-term obligations and has sufficient liquidity to manage day-to-day operations, pay suppliers, and invest in growth. Positive working capital is generally seen as a positive sign, especially when it's consistent over time.

Apple Inc. has a lower current ratio than Microsoft's current ratio for the last three years. Apple Inc. may signal a higher risk of default, so Microsoft's excessively higher current ratio indicates better liquidity and financial health.

Apple's higher D/E ratio may indicate higher financial risk because the company has significant debt obligations so that Apple may repay debts during economic downturns or interest rate hikes. Microsoft's D/E ratio generally moderates the company's stability and lower risk than Apple Inc.

Apple experienced a decline in its TIE ratio from 41.19 in 2021 to 29.06 in 2023. This suggests its ability to cover interest expenses with operating income has weakened. Microsoft shows an improving trend. Its TIE ratio increased from 29.80 in 2021 to 44.98 in 2023. This indicates that Company B has become more capable of servicing its interest obligations. Apple has seen a decline in its TIE ratio, which may raise concerns about its creditworthiness. Microsoft has strengthened its financial position by increasing its TIE ratio, signaling better debt coverage. Remember that a higher TIE ratio generally indicates a healthier financial position, while a lower ratio may signal potential credit risks.

Apple has maintained a relatively stable RNOA, ranging from 1.50 to 1.98. This suggests consistent operational efficiency in utilizing its net operating assets. Microsoft shows more volatility. While it improved from negative RNOA in 2021 to positive values in subsequent years, the overall trend is less stable. The RNOA of 0.35 in 2023 indicates moderate operational efficiency. Apple demonstrates better stability in net operating assets. Microsoft has made progress but still needs to enhance its operational efficiency further. At a point, the RNOA reflects how effectively a company generates profits from its operating assets.

Apple has maintained a relatively stable ROCE, with values ranging from 1.73 to 2.36. This indicates consistent efficiency in generating profits from the capital employed. Microsoft shows lower ROCE values. Although it improved slightly from 0.49 in 2021 to 0.50 in 2022, it declined to 0.43 in 2023. This suggests that Microsoft is less effective in utilizing its capital to generate profits. Apple demonstrates better capital efficiency. Microsoft needs to enhance its ROCE to improve profitability.

In summary, Apple has stability in working capital but declining profitability metrics. Microsoft shows better working capital, a higher current ratio, and vital profitability metrics.

References

Subramanyam, K.R., & Wild, J. (2007). *Financial statement analysis* (1st ed.). McGraw-Hill.

McGraw-Hill Higher Education.

Novet, J. (2024). *Microsoft briefly tops Apple as the most valuable public company.*

<https://www.cnbc.com/2024/01/11/microsoft-replaces-apple-as-most-valuable-public-company.html>

Vlastelica, V.& Bass, D. (2021). *Microsoft Joins Apple in the \$2 trillion club briefly.*

<https://www.aljazeera.com/economy/2021/6/23/microsoft-joins-apple-in-the-2-trillion-club-briefly>

Soni, A. (2024). *Microsoft briefly overtakes Apple as the world's most valuable company.*

<https://www.foxbusiness.com/markets/microsoft-briefly-overtakes-apple-worlds-valuable-company>

Microsoft.com (n.d). *Company News and Source.*

<https://news.microsoft.com/source/topics/innovation/>

WSJ.com (2024). *Microsoft Corp.* <https://www.wsj.com/market-data/quotes/MSFT/company-people>