

Apple Inc. Ratio Analysis & Interpretation

In this report I will analyse the findings from the initial ratio analysis of Apple Inc. I will aim to analyse these findings in multiple ways, including: interpretation of the ratio, analysis of the historic trend, and comparison with Samsung Electronics Co., Ltd, who I have recognised as Apple Inc.'s main competitor across a number of business segments. The report will be segregated into 8 major sections based upon the ratio categories used in the initial ratio analysis.

Industry benchmark data was collected from: (<https://www.readyratios.com/sec/industry/3571/>) and (https://csimarket.com/Industry/industry_Profitability_Ratios.php?s=1000)

1.0 Liquidity Ratios

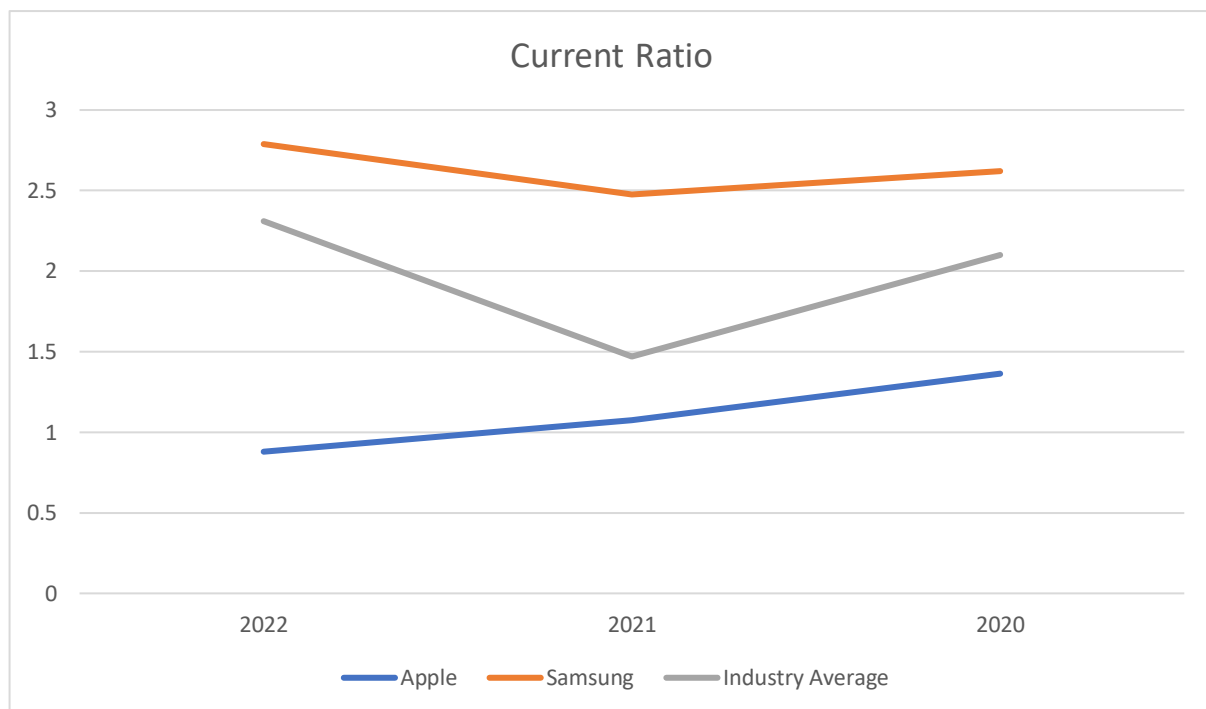
1.1 Current Ratio

The current ration measures a company's ability to pay its short-term obligations. Generally, a current ratio under 1 indicates that a company may be unable to cover its short-term obligations with its current assets, while a current ratio too great (over 3), can indicate a company is not deploying is capital efficiently and may be a signal of poor management.

Apple's current ratio as of 2022 is 0.88, which is below 1, indicating that the company may be lacking in current assets to cover is immediate financial obligations, while in the previous 2 periods the current ratio was slightly above 1 (1.07 & 1.36) indicating the company was able to cover its financial obligations while efficiently utilising its assets to enable longer term growth and increase revenues. It is crucial to further analyse the other liquidity ratios to better understand the situation, and to draw a final conclusion based only upon this ratio alone would be incorrect.

| | | 2022 | 2021 | 2020 |
|-----|---------------|-------------|------------|-------------|
| 1.0 | Liquidity | | | |
| 1.1 | Current ratio | 0.879356029 | 1.07455312 | 1.363604448 |

The historical trend of Apple's current ratio has been significantly decreasing over the period, suggesting they are less able to cover their short time liabilities. It can be seen in the data that while the current assets of the company have remained relatively stable, while the current liabilities have steadily increased over the period causing the decline in the current ratio. The "Accounts payable" and "other current liabilities" have been the biggest contributor to this increase in short term liabilities in absolute terms, while "Commercial paper" and "Term debt" have contributed to a lesser extent.



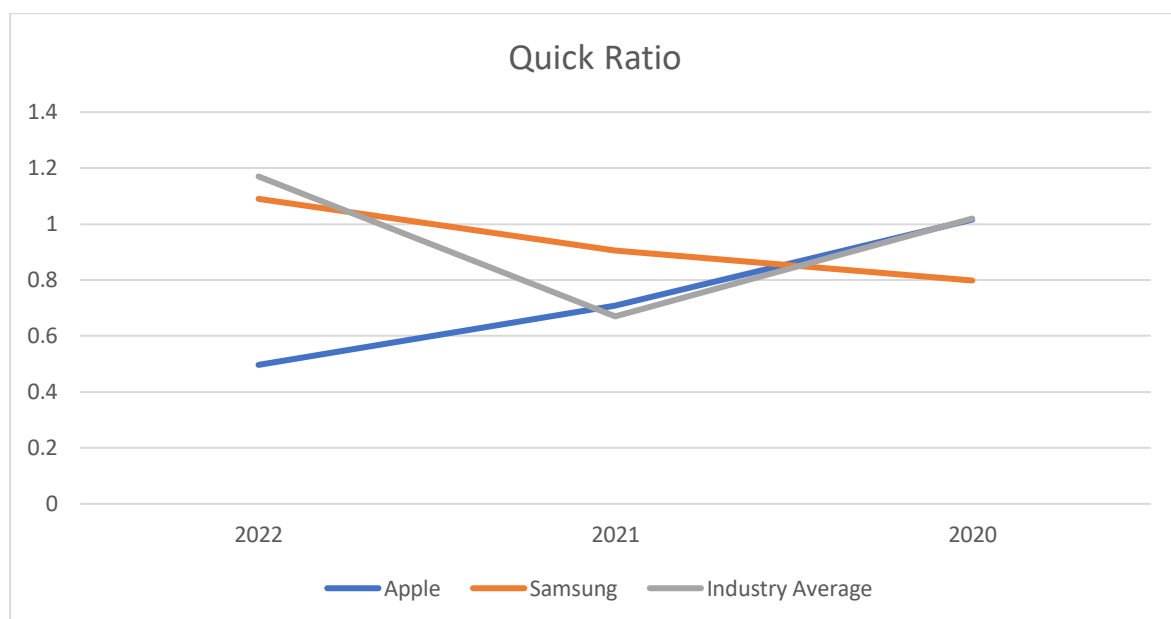
In comparing the current ratio of Apple with Samsung and the industry average, it can be seen that Apple's current ratio is significantly lower than both Samsung and the Industry average, and while Samsung and the industry average have both slightly increased over the period, Apple has declined. This can be interpreted in multiple ways. Firstly, that Apple has a worse current asset to liability ratio than its competitors and therefore is at greater financial risk, or it could be argued that they are more effective at employing their spare capital into other investments. While if this ratio continues to fall even lower beyond this point it could be a sign of financial issues, I believe that it is within an acceptable range. It will be important to analyse the other liquidity ratios in more detail to gain a greater understanding of the situation at hand.

1.2 Quick Ratio

The quick ratio is an indicator of a company's short-term liquidity position and measures a company's ability to meet its short-term obligations using only its most liquid assets. While similarly to the current ratio, the quick ratio removes certain current assets which cannot immediately be used to cover its liabilities such as: Inventories, vendor non-trade receivables and other current assets. As it indicates the company's ability to instantly use its near-cash assets to pay down its current liabilities. Overall, the quick ratio is a more conservative estimate of the company's liquidity, and can be considered a more accurate measure of a company's ability to instantly meet its obligations, as short-term assets such as inventories could have a large variance in the time taken to convert into cash, and therefore be used to cover short term liabilities. Similarly to the current ratio, the quick ratio does not offer a full explanation of the company's current situation and further analysis will be required.

| Quick Ratio | 2022 | 2021 | 2020 |
|-------------|----------|----------|----------|
| Apple | 0.496733 | 0.708609 | 1.015855 |

Apple's quick ratio as of 2022 is 0.49, which is less than 0.5, meaning that the quick assets of the company would not be able to cover even half of the company's liabilities for this period. This is somewhat concerning, as it shows a large discrepancy between the value of the company's liabilities and their ability to cover them. In the previous period of 2021, the quick ratio was 0.71, and in the period before 2020 the quick ratio was 1.01, this shows that the companies' ability to meet their short-term obligations using quick assets has sharply decreased over the period, which can be attributed both to an increase in current liabilities but also large decreases in cash and cash equivalents, and marketable security holdings.



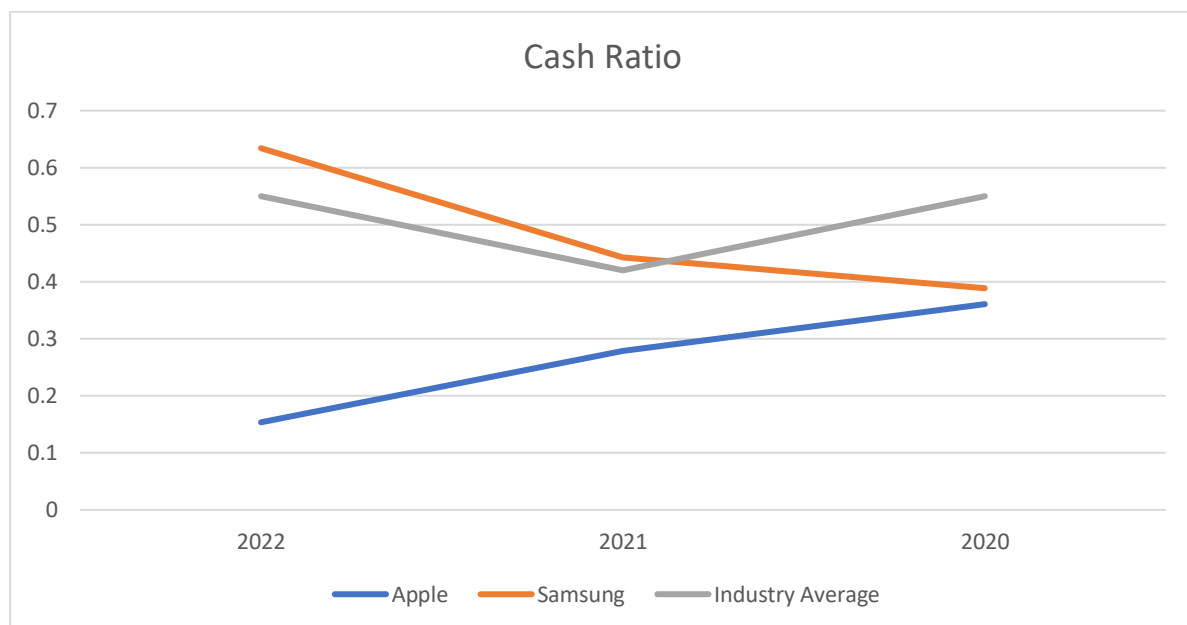
In comparing Apple's quick ratio with Samsung and the industry average, it can be seen that there has been a decreasing trend over the time period. Apple's quick ratio in the period of 2022 is well below both the industry average and its competitor Samsung by a considerable margin, while in the previous two periods Apple's quick ratio is well in line with the industry average and within a similar range to Samsung. While the worsening trend and low value of Apple's quick ratio can be considered an indicator of poor liquidity and the likelihood of the company facing issues in meeting its current liabilities is greater, it can also be a sign of more prudent capital allocation, and in particular for the 2022 period, I believe there may be another reason for such a low value, as the subsequent decreases in cash, cash equivalents and securities, and increase in current liabilities could signal a number of positive moves by the company's management such as investments, and a more thorough analysis of these values would be required as to deduce the cause and therefore risks associated with the values and the underlying business activities.

1.3 Cash Ratio

Similarly to the current ratio and the quick ratio, the cash ratio measures a company's liquidity and ability to meet its short-term liabilities. The cash ratio deducts all other current assets apart from cash and cash equivalent assets, making the cash ratio the most conservative estimate of the liquidity measures we have looked at so far. The cash ratio can also be interpreted similarly to the above, where a value of 1 or greater meaning that a company's capital reserves are sufficient to meet all of its short-term obligations, while values less than 1 indicate that the company cannot meet its short-term obligations using only its cash and cash equivalent reserves. Again, value much greater than 1 can be a signal of poor management and a lack of efficient investment policies, while values much less than 1 can indicate the company's inability to meet its short-term obligations.

| Cash Ratio | 2022 | 2021 | 2020 |
|------------|----------|----------|---------|
| Apple | 0.153563 | 0.278449 | 0.36071 |

Apple's cash ratio as of 2022 is 0.15, meaning that Apple would need 6.6 times as much cash to meet its short-term obligations. This is somewhat concerning, as it shows a large discrepancy of capital which the company will need to cover. In the previous periods, the cash ratios were 0.28, and 0.36, which again was insufficient to meet the company's obligations, but a considerable decreasing trend can be observed, meaning that the company's ability to meet its short-term obligations has been decreasing considerably year on year over the period of analysis.



In comparing Apple's cash ratio with Samsung and the industry average, it can be observed that Apple's cash ratio has seen a large net decrease over the period, while Samsung has seen a net increase and the industry average has remained relatively stable. Both Samsung and the industry average have values approximately in the range of $0.4 < 0.6$, while Apple is

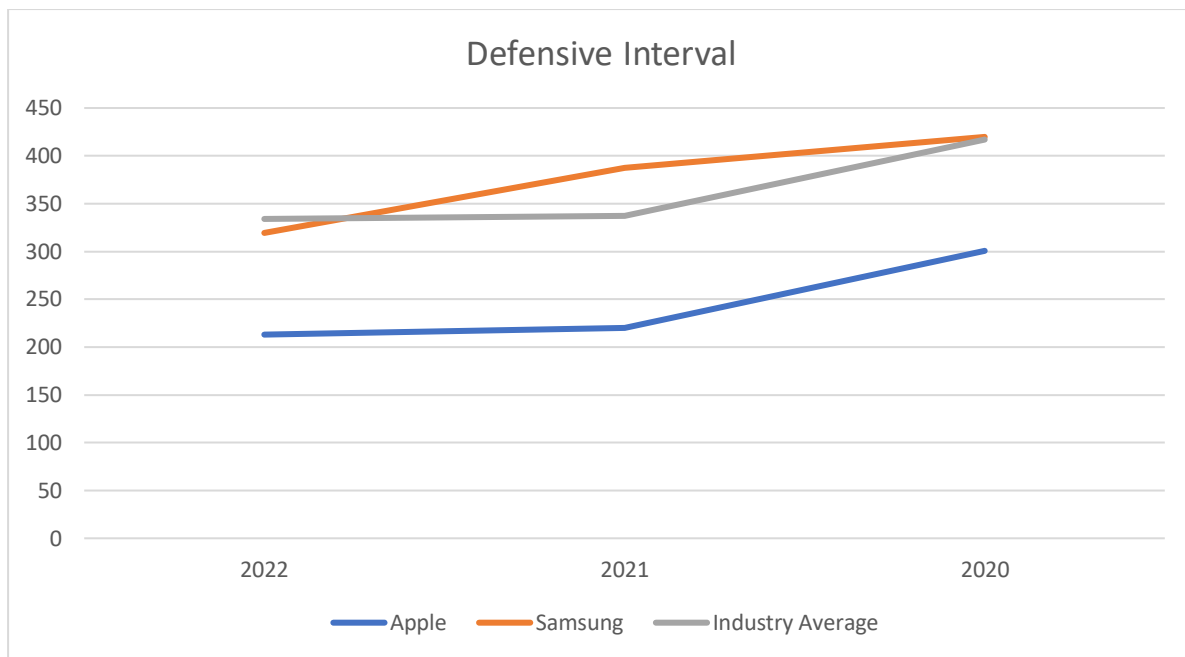
well below this level, trending down to 0.15 in the period of 2022. Similarly to the two previous liquidity metrics, while these findings are concerning for the financial health of Apple, I believe there may be a reasonable explanation for Apple's seemingly low values, and further research and analysis is needed to determine whether the company's situation is truly as troubling as it may seem from this initial analysis.

1.4 Defensive Interval

The defensive interval is a financial metric that indicates the number of days that a company can operate without needing to access noncurrent assets. The DIR is considered by some market analysts to be a more useful liquidity ratio than the standard quick ratio or current ratio due to the fact that it compares assets to expenses rather than comparing assets to liabilities.

Apple's defensive interval as of 2022 was 213 days, signalling that the company has somewhat sufficient reserves of current assets to meet its capital expenditure needs for 213 days, which would seem to be a sufficient period considering that future capital inflows could be expected within this period. In the previous periods, the defensive interval was 219 days in 2021 and 300 days in 2020, showing that over the period of analysis the historical trend of Apple's defensive interval has decreased, meaning that the current assets of Apple are able to meet the capital expenditure needs of Apple for a shorter length of time. This decline has mainly been driven by increases in the total cost of sales, as the current assets minus inventories have remained relatively stable over the period in comparison.

| Defensive Interval | 2022 | 2021 | 2020 |
|--------------------|--------|---------|----------|
| Apple | 213.01 | 219.801 | 300.6209 |



As can be seen from the above graph, the trend of Apple's defensive interval has remained consistent with both Samsung and the Industry average, maintaining a consistent 100-point difference over the period of analysis. While the defensive interval is lower than both Samsung and the industry average, it does not appear to be at an alarming level as to cause financial stress on Apple and its operations.

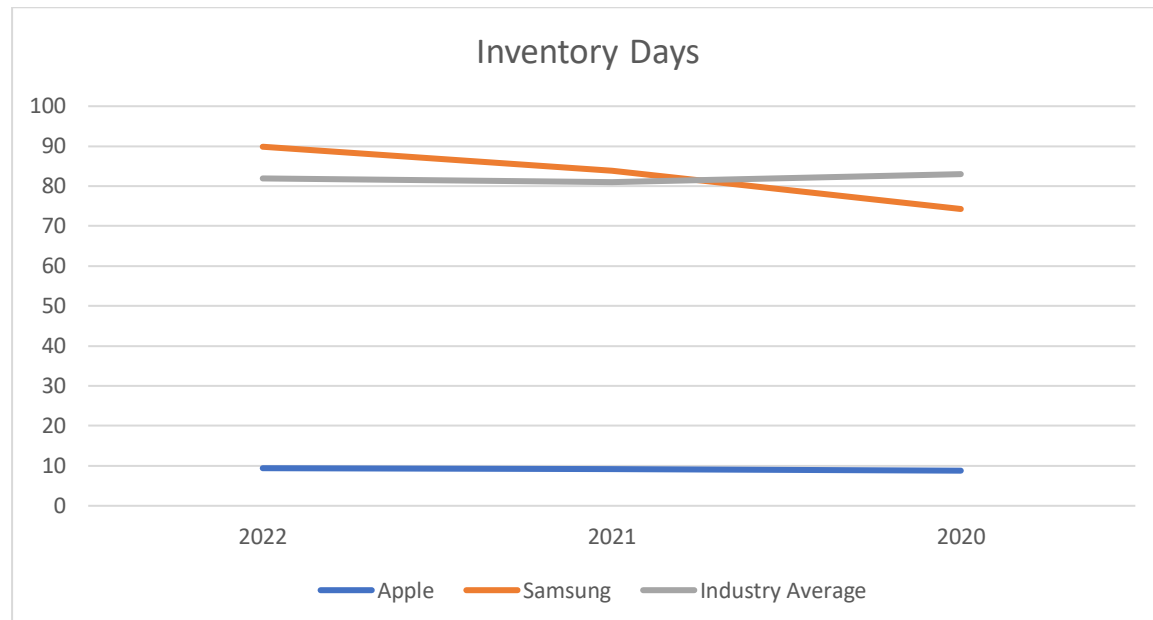
1.5 Inventory Days

Inventory days is a measurement of the average number of days or time required for a business to convert its inventory into sales. Generally, a small average of days sales, or low days sales in inventory, indicates that a business is efficient, both in terms of sales performance and inventory management. Hence, it is more favourable than reporting a high Inventory days ratio, although it is important to consider the context of inventory days, as the metric can vary wildly across sectors, and various companies may need to accumulate high stock levels in order to meet sporadic or seasonal demands.

| Inventory Days | 2022 | 2021 | 2020 |
|------------------|----------|----------|----------|
| Apple | 9.409674 | 9.118102 | 8.790318 |
| Samsung | 89.85758 | 83.82035 | 74.27929 |
| Industry Average | 82 | 81 | 83 |

As it can be seen in the historical data, Apple's Inventory days metric is well below both Samsung and the industry average, indicating that by comparison, Apple is extremely efficient at stock turnaround and supply chain planning. Apple achieves this through various key business structure elements. Firstly, services make up a large proportion of overall sales when compared with others, and these service sales are generally executed on much shorter timeframes. Additionally Apple's utilisation of 3rd party manufacturers for its physical

products means that the products do not appear on the balance sheet until they are fully manufactured and are ready to be shipped to the customer, and finally the high demand for products and Apple's sales structure relies heavily upon pre-orders and waiting lists, where customers place orders well in advance, meaning that goods are pre-sold, and production can be matched with these orders and the goods can be shipped directly to consumers.



1.6 Payable Days

Payable days is a financial ratio that indicates the average time (in days) that a company takes to pay its bills and invoices to its trade creditors. A company with a higher value of DPO takes longer to pay its bills, which means that it can retain available funds for a longer duration, allowing the company an opportunity to use those funds in a better way to maximize the benefits. A high DPO, however, may also be a red flag indicating an inability to pay its bills on time.

Considering an average ratio of 30 to 90 days within the technology sector, Apple's payable days for the period have gradually increase, from 91 days in 2020, to 97 days in 2022. Although this is on the upper end of the industry average range, I do not believe this to be a cause for concern, as it is only slightly above the range, and is a sign of Apple's increasing ability to negotiate favourable payment terms with its suppliers.

| Payable Days | 2022 | 2021 | 2020 |
|--------------|----------|----------|----------|
| Apple | 97.05043 | 93.85107 | 91.04819 |
| Samsung | 23.14046 | 29.50619 | 24.60172 |

When compared with Samsung, it can be seen that Samsung has a much lower days payable. This is a result of Apple's average accounts payable being substantially higher than those of

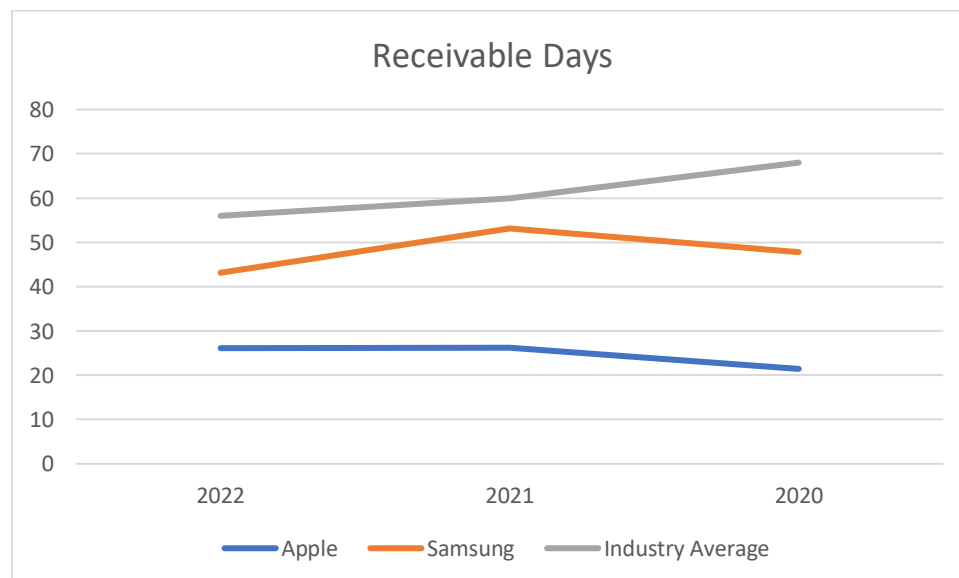
Samsung (64,115 versus 8,244 in 2022), which is understandable as in the previous section the difference in business models between the two companies where Apple outsources a large majority of its operations whereas Samsung are personally responsible for a much larger part of their own processes. It is also important to consider the geographical differences and therefore business culture variations between the companies, and that longer payment terms are more common in the west.

1.7 Receivable Days

Receivable Days is a metric that measures the average time it takes for a business to collect outstanding payments from its customers. It signifies the duration an invoice remains unpaid before it is eventually settled in days. It measures the business's ability to handle short-term collections from its customers, which are crucial to intern pay the business's own financial obligations.

| Receivable Days | 2022 | 2021 | 2020 |
|------------------|----------|----------|----------|
| Apple | 26.08783 | 26.21931 | 21.43344 |
| Samsung | 43.13967 | 53.14668 | 47.72696 |
| Industry Average | 56 | 60 | 68 |

Apple's receivable days as of 2022 was 26 days, well below both that of Samsung and the industry average rate, showing that Apple is extremely efficient in collecting its receivables when compared with its competitors.



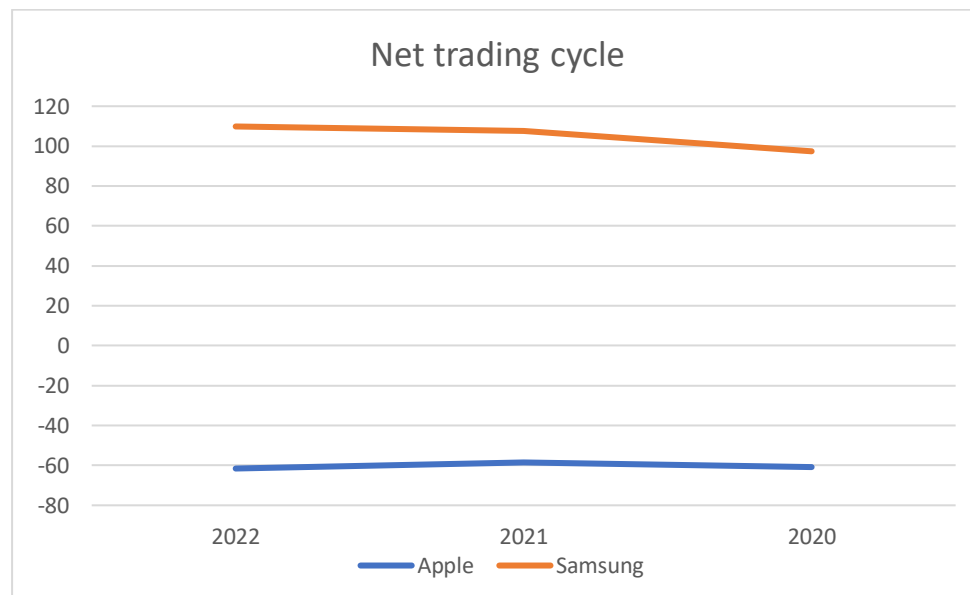
It can be seen in the that over the period of analysis, Apple's receivable days have remained relatively stable, only increasing slightly over the period, while both Samsung and the Industry have seen small net decreases over the same period. Despite this difference in trend Apple still remains well below its competitors, and thus has an advantage.

1.8 Net trading cycle

The Net trading cycle is a metric that considers how much time in days the company needs to sell its inventory, collect receivables, and pay its bills. This metric expresses how many days the company takes to convert the cash spent on inventory back into cash from selling its product or service. The shorter the cash conversion cycle, the better, and the less time cash is in accounts receivable or inventory.

| Net trading cycle | 2022 | 2021 | 2020 |
|-------------------|----------|----------|----------|
| Apple | -61.5529 | -58.5137 | -60.8244 |
| Samsung | 109.8568 | 107.4608 | 97.40454 |

It can be seen from the data, that Apple's net trading cycle is negative, meaning that the Apple receives money from its sales before it has to pay its suppliers, which is a highly desirable position as it improves liquidity and operational efficiency, meaning the company can grow its operations at a faster than usual rate.



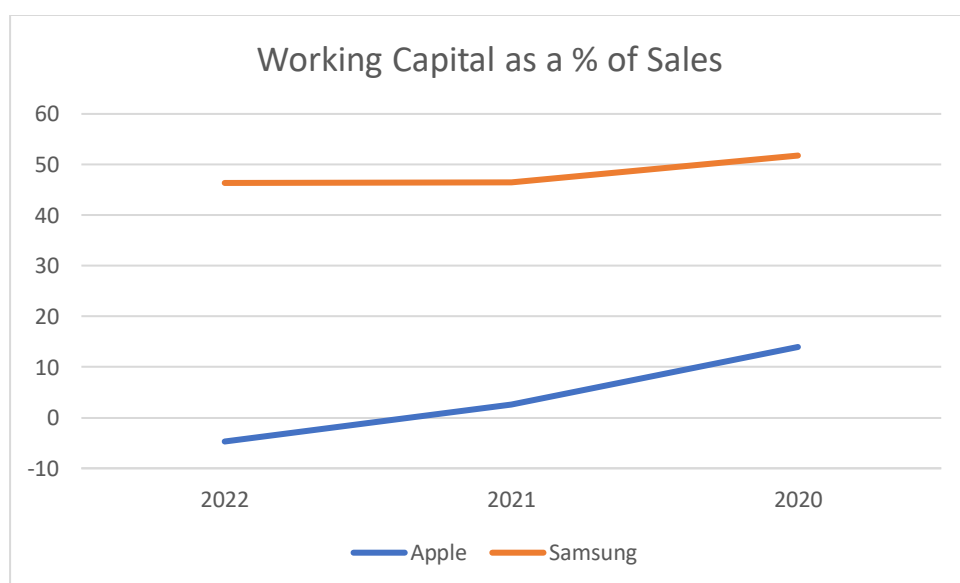
When compared with the net trading cycle of Samsung, it can be seen that there is a large difference between the two companies, and whilst Apple's net trading cycle has seen a small net decrease over the period, Samsung has seen a marginal increase, demonstrating Apple's logistical and operational efficiency advantages.

1.9 Working Capital as a % of Sales

Working Capital as a % of Sales is a ratio that measures how efficiently a company is using its working capital to support sales and growth. Working capital turnover measures the relationship between the funds used to finance a company's operations and the revenues a company generates to continue operations and turn a profit. A high turnover ratio shows that management is very efficient at using a company's short-term assets and liabilities to support sales. It's generating a higher dollar amount of sales for every dollar of working capital used. A low ratio may indicate that a business is investing in too many accounts receivable and inventory to support its sales. This could lead to an excessive number of bad debts or obsolete inventory.

| Working Capital as a % of Sales | 2022 | 2021 | 2020 |
|---------------------------------|----------|----------|----------|
| Apple | -4.71105 | 2.55729 | 13.95953 |
| Samsung | 46.36383 | 46.51059 | 51.77712 |

When analysing the working capital as a % of sales, it can be seen that both Apple and Samsung have net decreases in the percentage over the period, but Apple's percentage is much lower than that of Samsung's. This is firstly due to Apple's much greater current liabilities, and also its greater overall net sales.



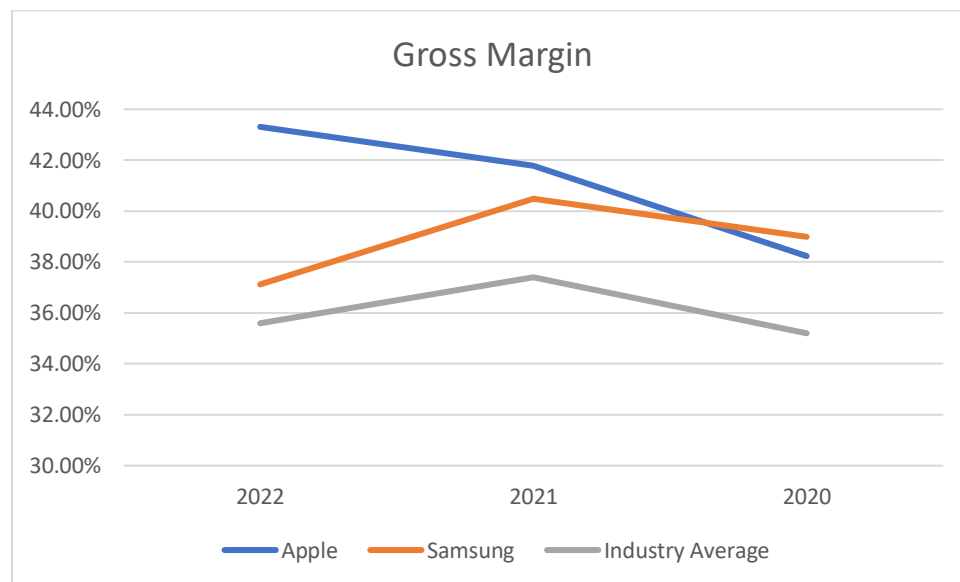
2.0 Profitability Ratios

2.1 Gross Margin

Gross margin is the percentage of a company's revenue that's retained after direct expenses such as labour and materials have been subtracted. It's an important profitability measure that looks at a company's gross profit as compared to its revenue.

| Gross Margin | 2022 | 2021 | 2020 |
|------------------|--------|--------|--------|
| Apple | 43.31% | 41.78% | 38.23% |
| Samsung | 37.12% | 40.48% | 38.98% |
| Industry Average | 35.60% | 37.40% | 35.20% |

As can be seen from the data, Apple's gross margin is high, showcasing the company's operational efficiencies and competitive advantages.



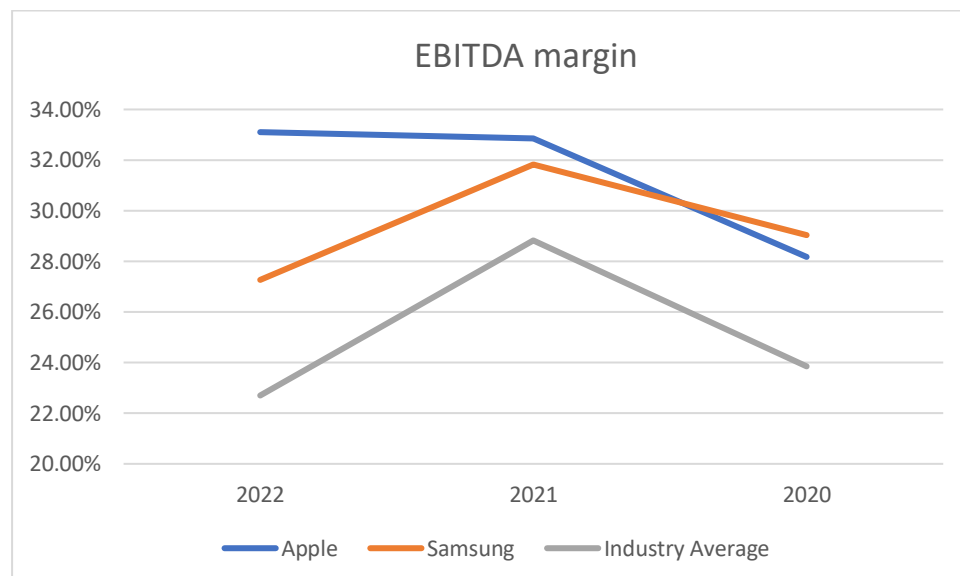
When compared with both Samsung and the industry average, it can be seen that Apple's gross margin is well above that of its competitors, and while Samsung has seen a net decrease over the period, and the industry average has remained relatively stable, Apple's gross margin has grown considerably over the period.

2.2 EBITDA Margin

EBITDA margin is a profitability ratio that measures how much in earnings a company is generating before interest, taxes, depreciation, and amortization, as a percentage of revenue. Because EBITDA is calculated before any interest, taxes, depreciation, and amortization, it removes these numbers to focus on the essential operating profits and cash flows.

| EBITDA margin | 2022 | 2021 | 2020 |
|------------------|--------|--------|--------|
| Apple | 33.10% | 32.87% | 28.17% |
| Samsung | 27.27% | 31.82% | 29.03% |
| Industry Average | 22.70% | 28.83% | 23.85% |

As it can be seen from the data, Apple's EBITDA margin is higher than that of Samsung and the industry average, and while Samsung and the industry have seen net decreases over the period, Apple's EBITDA margins has seen a net increase.



Similarly to the gross margin analysis, it is evident that Apple has a clear advantage over its competitors.

2.3 EBIT Margin

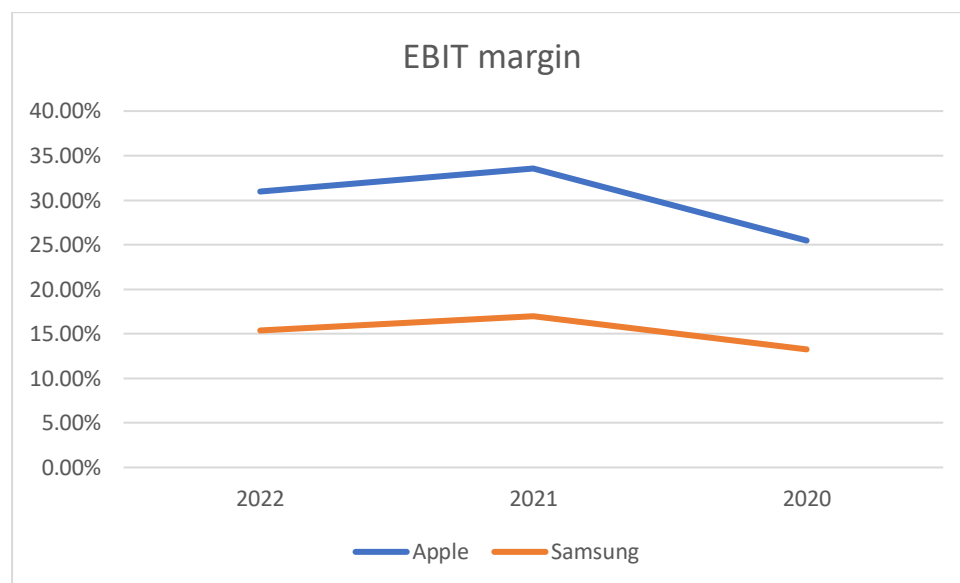
Similarly to EBITDA, EBIT stands for Earnings Before Interest and Taxes. It's a profitability indicator or a measure of a company's earnings potential, representing the pure operating performance of a business before accounting for financing decisions and tax environments.

This metric is particularly useful for investors and analysts because it focuses on core business operations, revealing how efficiently a company generates profits from its primary activities. By excluding interest and tax expenses, EBIT allows stakeholders to evaluate a

company's fundamental earning power without the distortions of capital structure or regional tax policies.

| EBIT margin | 2022 | 2021 | 2020 |
|--------------------|-------------|-------------|-------------|
| Apple | 31.00% | 33.56% | 25.47% |
| Samsung | 15.34% | 16.98% | 13.25% |

As it can be seen from the data, Apple's EBIT margin is considerably higher than that of Samsung. Both Apple and Samsung have shown net increases over the period, while Apple's increase in EBIT margin is greater than that of Samsung.

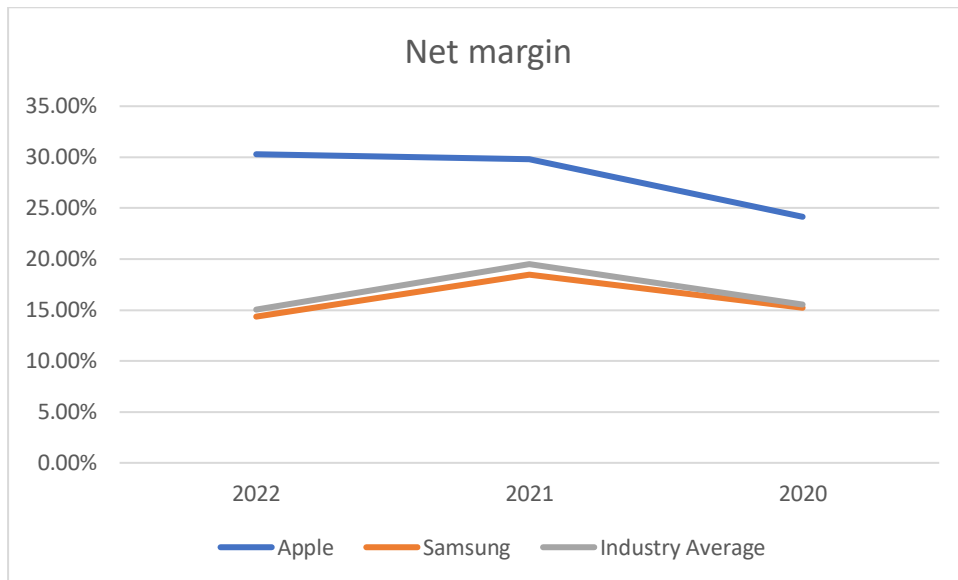


2.4 Net Margin

Net Profit Margin is a financial ratio used to calculate the percentage of profit a company produces from its total revenue. It measures the amount of net profit a company obtains per dollar of revenue gained. Net profit margin is one of the most important indicators of a company's financial health. By tracking increases and decreases in its net profit margin, a company can assess whether current practices are working and forecast profits based on revenues.

| Net margin | 2022 | 2021 | 2020 |
|-------------------|-------------|-------------|-------------|
| Apple | 30.29% | 29.78% | 24.15% |
| Samsung | 14.35% | 18.47% | 15.20% |
| Industry Average | 15.04% | 19.51% | 15.55% |

It can be seen in comparing the data, that Apple's net margin is considerably greater than both Samsung and the industry average, and while Samsung and the industry average have remained relatively stable both displaying small net decreased, Apple's net margin has increased considerably over the same period. Again, displaying Apple's operational efficiency and competitive advantages.



3.0 Solvency / Debt management Ratios

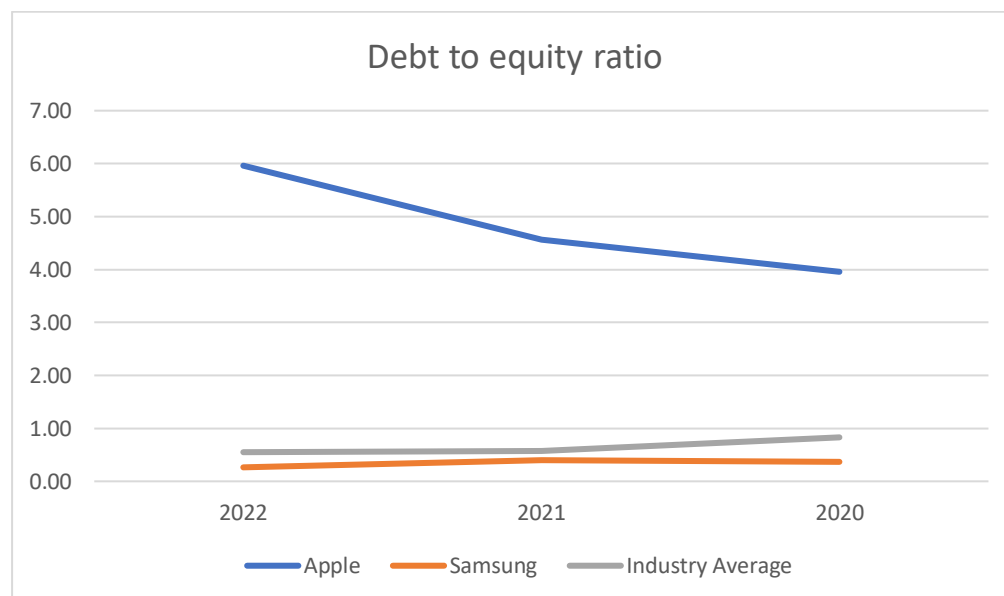
3.1 Debt to equity ratio

The debt-to-equity ratio is used to evaluate a company's financial leverage and is calculated by dividing a company's total liabilities by its shareholder equity. The debt-to-equity ratio is an important metric in corporate finance. It is a measure of the degree to which a company is financing its operations with debt rather than its own resources.

The debt-to-equity ratio measures how much debt a company has taken on relative to the value of its assets net of liabilities. Debt must be repaid or refinanced, imposes interest expense that typically can't be deferred, and could impair or destroy the value of equity in the event of a default. As a result, a high debt-to-equity ratio is often associated with high investment risk; it means that a company relies primarily on debt financing.

| Debt to equity ratio | 2022 | 2021 | 2020 |
|----------------------|------|------|------|
| Apple | 5.96 | 4.56 | 3.96 |
| Samsung | 0.26 | 0.40 | 0.37 |
| Industry Average | 0.55 | 0.57 | 0.83 |

It can be seen from the data, that as of 2022, Apple's debt to equity ratio was 5.96, meaning that Apple had \$5.96 in debt for every \$1 of equity. This is a less than desirable position, and it can be seen that Apple is a highly leveraged company, susceptible to a variety of risks such as the greater impact of varying interest rates or short-term variations in consumer demand. Although this ratio alone cannot alone provide a full picture of the situation, and it is important to consider other debt related metrics, it is non the less important to consider.



When compared with Samsung and the industry average, it can be seen that both Samsung and the industry average are below 1, showing that their equity out weights their debts, and

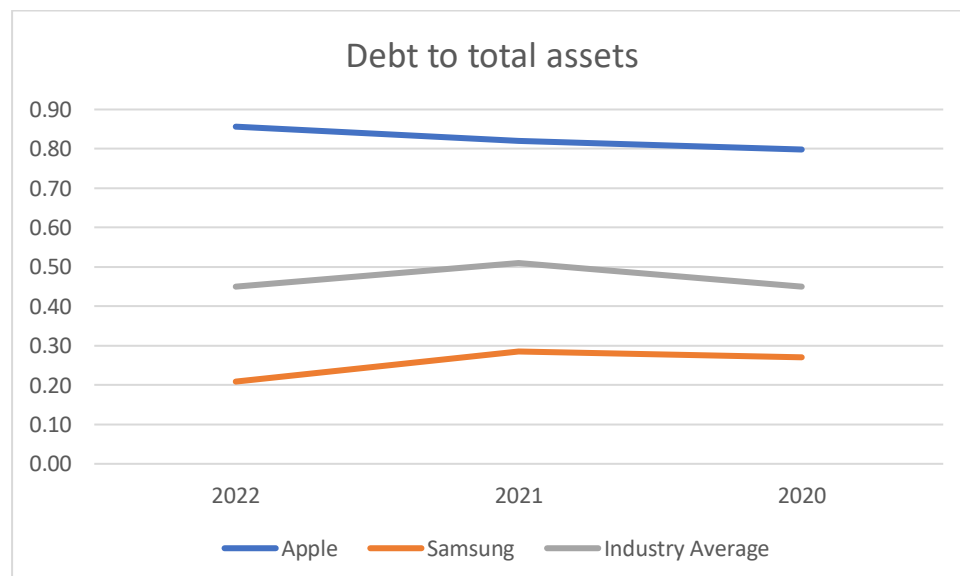
while Samsung and the industry average have seen a net decrease in debt to equity over the period, Apple has seen a considerable increase.

3.2 Debt to total assets

The debt to total assets, is calculated by dividing a company's total debt by its total assets. It is a leverage ratio that defines how much debt a company carries compared to the value of the assets it owns. Using this metric, we can compare leverage between companies. This information can reflect how financially stable a company is. The higher the ratio, the higher the degree of leverage. Depending on averages for the industry, there could be a higher risk of investing in that company compared to another.

| Debt to total assets | 2022 | 2021 | 2020 |
|----------------------|------|------|------|
| Apple | 0.86 | 0.82 | 0.80 |
| Samsung | 0.21 | 0.29 | 0.27 |
| Industry Average | 0.45 | 0.51 | 0.45 |

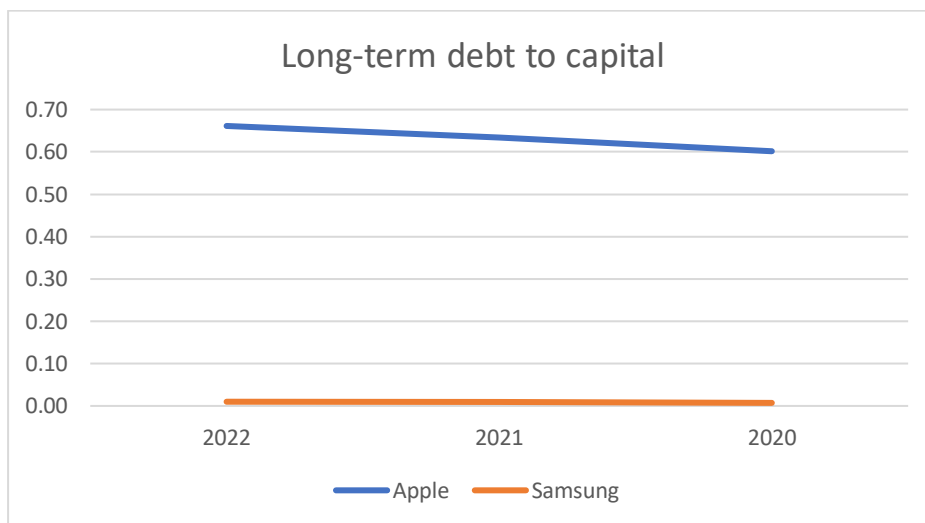
It can be seen from the data, that Apple's debt to total assets is higher than expected, although it must be noted that this metric is much less extreme than the debt-to-equity ratio discussed above, although still being high.



When compared with Samsung and the industry average, it can be seen that the ratio of Apple is well above the industry average, while Samsung is below the average. It can also be noted that Apple's debt to total assets has increased over the period of analysis, while Samsung's has decreased, and the industry average has remained stable. Again, similarly to the debt-to-equity ratio discussed above, it can be seen that Apple's debt to total asset rate is higher than its competitors and therefore can be considered to pose a greater risk to the businesses overall health.

3.3 Long-term debt to capital

The long-term debt to capitalization ratio, a variation of the traditional debt-to-equity ratio, shows the financial leverage of a firm. It is calculated by dividing long-term debt by total available capital (long-term debt, preferred stock, and common stock). Investors compare the financial leverage of firms to analyse the associated investment risk. High ratios indicate riskier investments, as debt is the primary source of financing and introduces a greater risk of insolvency.



It can be seen in comparing the ratio's, that Apple's long-term debt to capital ratio is much higher than that of Samsung, while both have seen an increase over the period the magnitude of Apples increase is much greater.

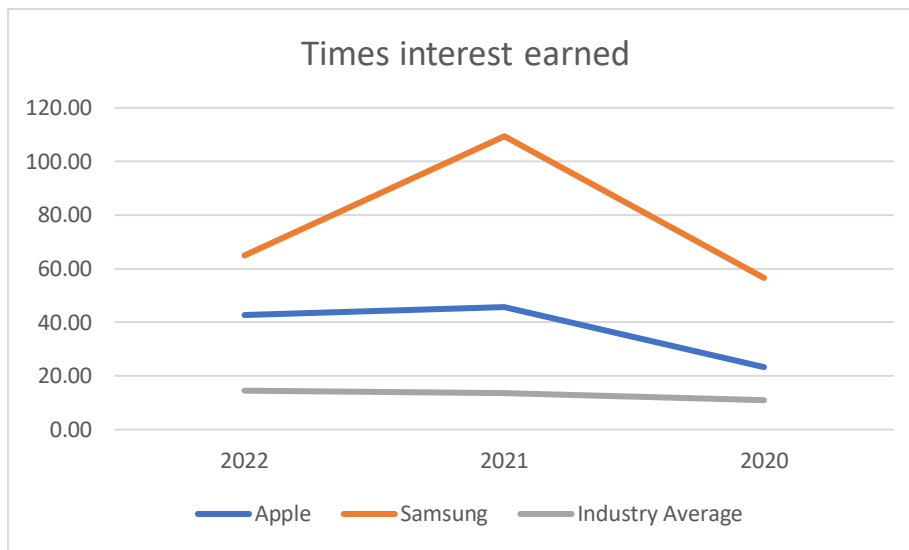
3.4 Times interest earned

The Times Interest Earned ratio measures a company's ability to meet its debt obligations on a periodic basis. This ratio can be calculated by dividing a company's EBIT by its periodic interest expense. The ratio shows the number of times that a company could, theoretically, pay its periodic interest expenses should it devote all of its EBIT to debt repayment.

The TIE's main purpose is to help quantify a company's probability of default. This, in turn, helps determine relevant debt parameters such as the appropriate interest rate to be charged or the amount of debt that a company can safely take on.

| Times interest earned | 2022 | 2021 | 2020 |
|-----------------------|-------|--------|-------|
| Apple | 42.67 | 45.68 | 23.29 |
| Samsung | 64.95 | 109.41 | 56.56 |
| Industry Average | 14.51 | 13.56 | 10.96 |

Apple's TIE as of 2022 was 42.67, meaning that the earnings of the company could be used to cover the interest expenses 42 times. Overall, this is a relatively stable situation, showing that payment of the interest expense is well within Apple's capability.



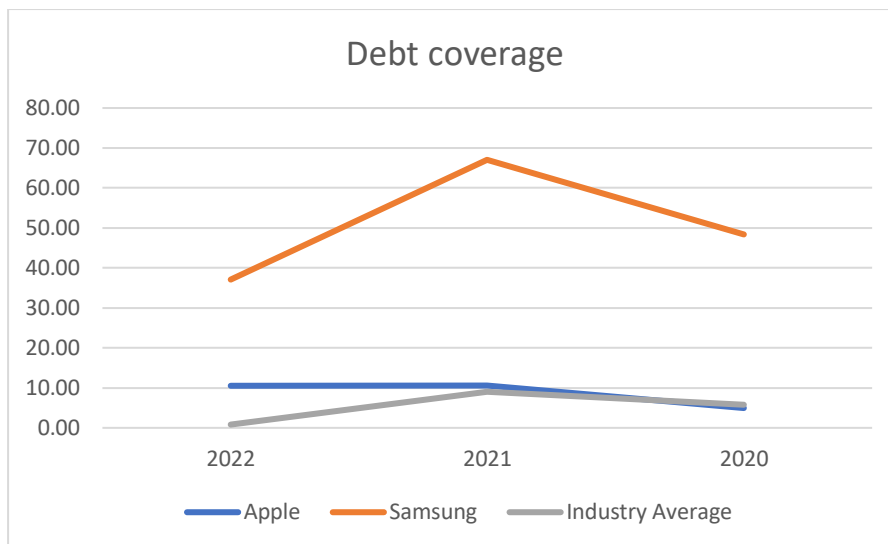
When compared with its competitors, it can be seen that Apple's TIE ratio has increased slightly over the period similarly to both Samsung and the industry average. While Samsung's TIE ratio is greater than that of Apple, it is still well above the industry average, and Apple's TIE ratio is well within an acceptable range.

3.5 Debt coverage

The debt coverage ratio measures a firm's available cash flow to pay its current debt obligations. The debt coverage ratio shows investors and lenders whether a company has enough income to pay its debts. The ratio is calculated by dividing net operating income by debt service, including principal and interest. a higher debt coverage ratio is considered better than a lower one. Anything less than 1 is considered very weak and suggests that a company owes more money to creditors than it generates in cash.

| Debt coverage | 2022 | 2021 | 2020 |
|------------------|--------|-------|-------|
| Apple | 10.52 | 10.51 | 4.95 |
| Samsung | 37.09 | 67.04 | 48.44 |
| Industry Average | 0.8175 | 9.02 | 5.82 |

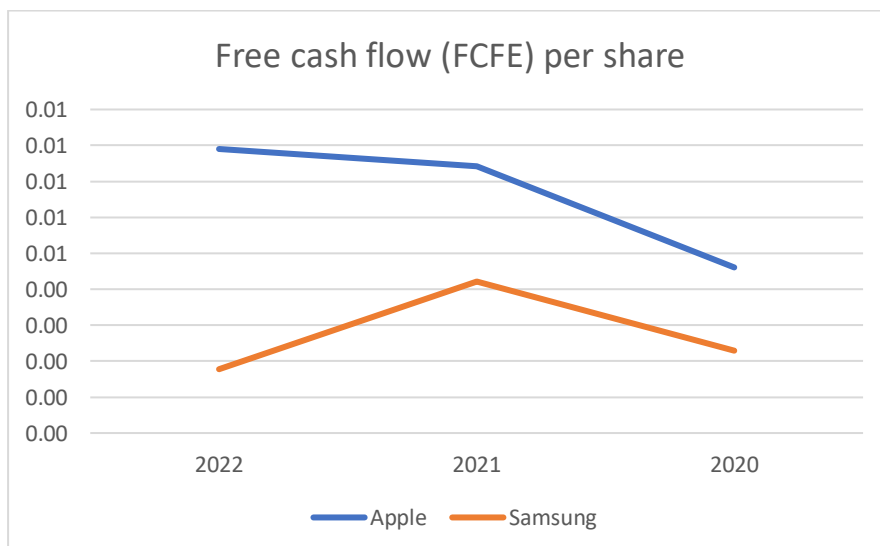
Apple's Debt coverage ratio of 10.52 in 2022 is a strong position, showing that Apple's EBIT is more than sufficient to cover its debt obligations, and the position of the company has also grown in terms of debt coverage over the period of analysis.



When compared with Samsung and the industry average, it can be seen that Apple's debt coverage is much lower than that of Samsung, while remaining on-par or above the industry average. While the industry average and Samsung have both seen a net decrease over the period, Apple has grown its strength in debt coverage, putting the company in a strong position as of 2022.

3.6 Free cash flow (FCFE) per share

Free cash flow (FCFE) per share is the amount of cash a business generates that is available to be potentially distributed to shareholders. It is calculated as Cash from Operations less Capital Expenditures plus net debt issued.



It can be seen from the data, that Apples FCFE per share is greater than that of Samsung, and while Samsung has seen a decreasing trend over the period, Apple's FCFE per share has increased, suggesting that the company is in a strong position with leftover cash available with could be distributed to shareholders.

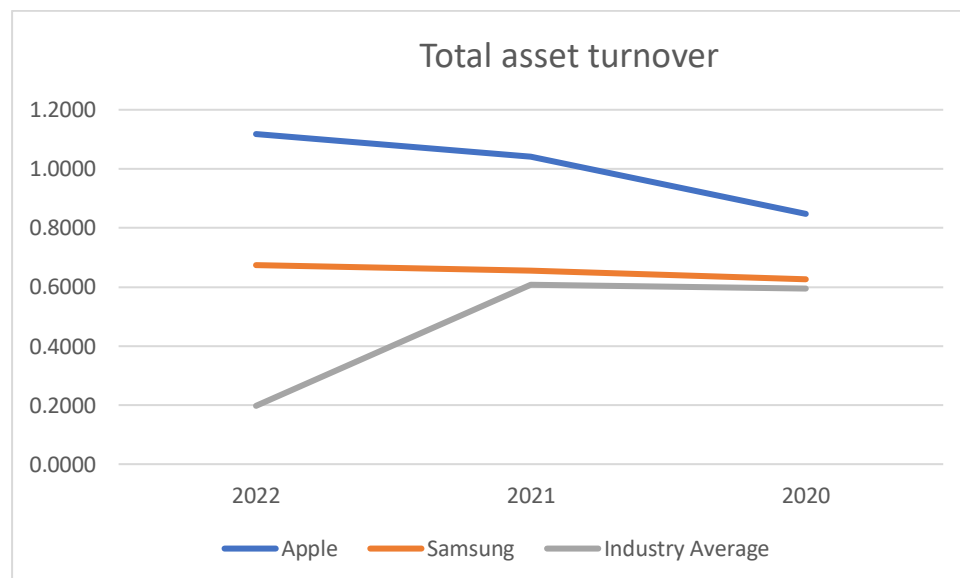
4.0 Asset utilization

4.1 Total asset turnover

The total asset turnover ratio, measures the efficiency with which a company uses its assets to generate revenues. The asset turnover ratio formula is equal to net sales divided by the total assets of a company. A company with a high asset turnover ratio operates more efficiently as compared to competitors with a lower ratio.

| Total asset turnover | 2022 | 2021 | 2020 |
|----------------------|--------|--------|--------|
| Apple | 1.1179 | 1.0422 | 0.8476 |
| Samsung | 0.6740 | 0.6554 | 0.6261 |
| Industry Average | 0.1975 | 0.6075 | 0.5950 |

Apple's total asset turnover rate as of 2022 was 1.12, showing that Apple is in a strong position, able to generate substantial revenues using its assets. It can also be seen that over the period of analysis, Apple's total asset turnover ratio has steadily increased, showing that the company is increasing its ability to generate ever greater revenues with its total assets.



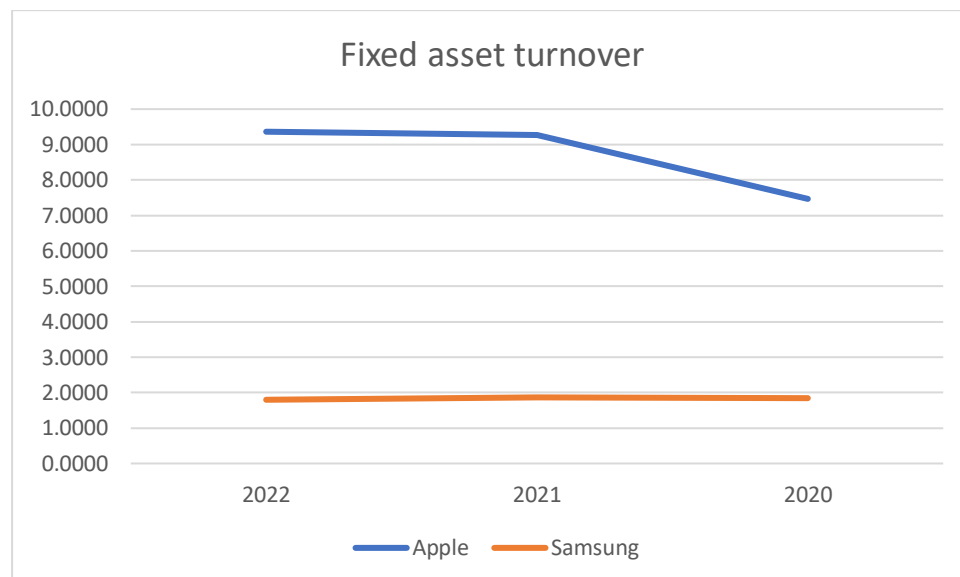
As it can be seen when compared with its competitors, Apple's total asset turnover ratio is well above both Samsung and the industry average, and while Samsung has seen a trend of modest increase over the period, and the industry average has shown a sizeable decrease, Apple has shown a moderate increase over the period. This data shows that Apple is well positioned compared with its competitors. While total assets are similar in value to those of Samsung, Apple is able to generate much higher total revenues with a similar value of total assets.

4.2 Fixed asset turnover

Fixed Asset Turnover is an efficiency ratio that indicates how well or efficiently a business uses fixed assets to generate sales. This ratio divides net sales by net fixed assets. The net fixed assets are comprised of the value of property, plant, and equipment for the period. Generally, a higher fixed asset ratio implies more effective utilisation of investments in fixed assets to generate revenue.

| Fixed asset turnover | 2022 | 2021 | 2020 |
|----------------------|--------|--------|--------|
| Apple | 9.3627 | 9.2753 | 7.4665 |
| Samsung | 1.7985 | 1.8649 | 1.8364 |

Similarly to the Total asset turnover ratio discussed above, it can be seen that Apple is in a strong position when considering fixed asset turnover, the ratio of 9.36 in 2022 showing that the value of Apple's revenues were 9.36 times greater than the value of its fixed assets.



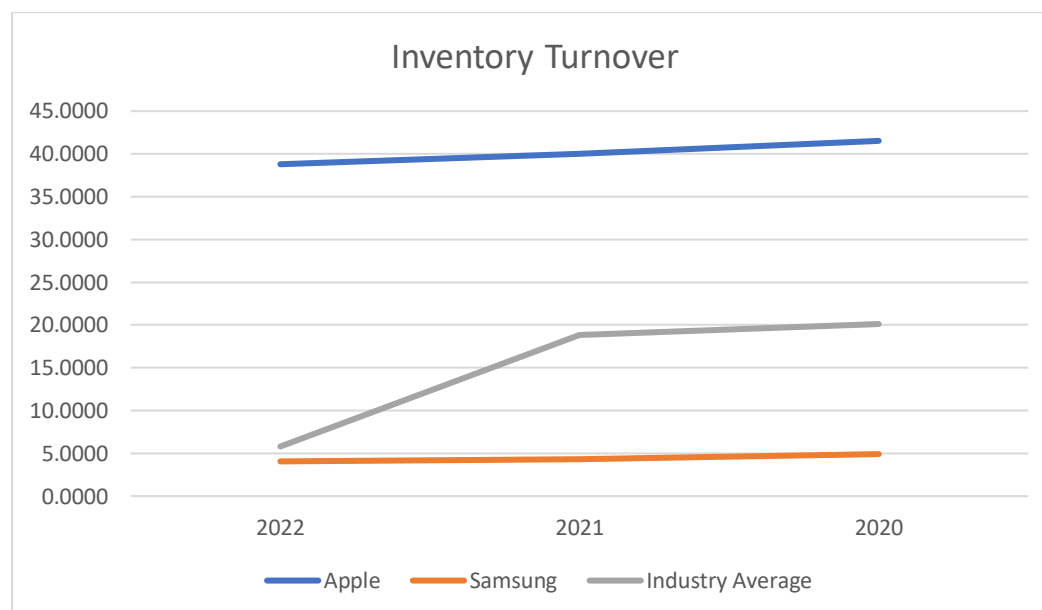
When compared with Samsung, it can be seen that Apple's fixed asset turnover ratio is well above that of Samsung, demonstrating a clear advantage to Apple. Over the period of analysis, Apple's fixed asset turnover ratio had increased, while Samsung has shown a slight decrease over the same period. It can be seen from the balance sheets of both companies, that alongside Apple's greater revenues, the value of its property, plant, and equipment is much lower than that of Samsung. This is due in large part to Apple's operating and business structure, where a large proportion of manufacturing processes are outsourced to other companies, and therefore the ownership of the equipment and equipment needed to produce these good are not owned by Apple itself.

4.3 Inventory turnover

The inventory turnover ratio, is an efficiency ratio that measures how efficiently inventory is managed. The inventory turnover ratio formula is equal to the cost of goods sold divided by average inventory to show how many times inventory is “turned” or sold during a period. The ratio can be used to determine if there are excessive inventory levels compared to sales. It is important to achieve a high ratio, as higher turnover rates reduce storage and other holding costs. A low turnover implies that a company’s sales are poor, it is carrying too much inventory, or experiencing poor inventory management. Unsold inventory can face significant risks from fluctuating market prices and obsolescence.

| Inventory Turnover | 2022 | 2021 | 2020 |
|--------------------|---------|---------|---------|
| Apple | 38.7899 | 40.0303 | 41.5230 |
| Samsung | 4.0620 | 4.3546 | 4.9139 |
| Industry Average | 5.8025 | 18.8325 | 20.1150 |

It can be seen that Apple’s inventory turnover ratio has remained stable around 40 for the period of analysis, showing Apple’s extremely strong position with its inventory, able to turn around high volumes of inventory in a relatively short space of time.



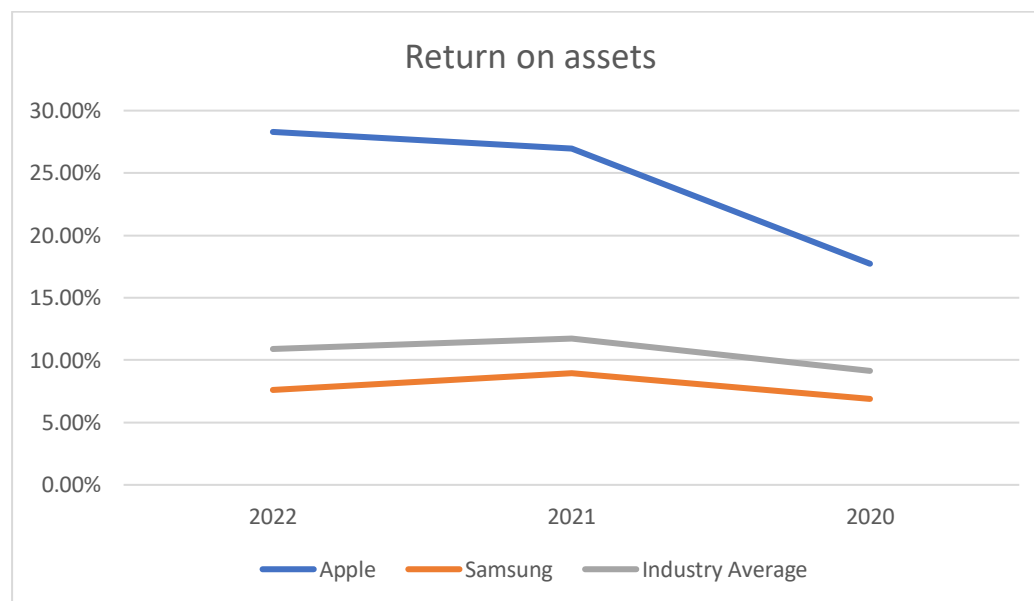
When compared with both Samsung and the industry average, it can be seen that Apple’s inventory turnover ratio is well above that of its competitors, and is a key advantage of Apple in the field, this large discrepancy between the ratio’s is due in large part to the small amount of inventories present on Apple’s balance sheet. As discussed previously, both Apple’s outsourcing of production, as well as products being manufactured and shipped based upon existing orders from its customers can be considered a primary reason for the low inventories, and can be considered as a large operational advantage Apple possesses over its competitors.

4.4 Return on assets (ROA)

Return on assets is a ratio that shows how much profit a company is generating from its assets. As such, it is seen as an indicator of how efficiently a company's management is deploying the economic resources it has available. ROA is expressed as a percentage and, in general, the higher the number, the better.

| Return on assets | 2022 | 2021 | 2020 |
|------------------|--------|--------|--------|
| Apple | 28.29% | 26.97% | 17.73% |
| Samsung | 7.62% | 8.95% | 6.89% |
| Industry Average | 10.91% | 11.73% | 9.14% |

It can be seen that Apple's return on assets as of 2022 was 28.29%, and has shown a strong upward trend during the period of analysis. This again solidifies the strength of Apple's position with the industry, and showcases the ability of the management to generate high levels of income in relation to the assets deployed.



When compared with both Samsung and the industry average, it can be seen that Apple's return on asset ratio is well above its competitors, and over the period of analysis has grown substantially, while its competitors have remained relatively stable only showing small increases in return of assets over the period of analysis relative to Apple. This large difference is driven mainly by Apple's exceedingly high net income, which is driven in turn by the large amount of sales executed by the company, as both operating expenses and assets between Apple and Samsung are relatively similar. It can be understood from the data that Apple is extremely efficient in terms of asset utilisation when compared with its competitors, and places the company in a very strong position both within its industry and with investors.

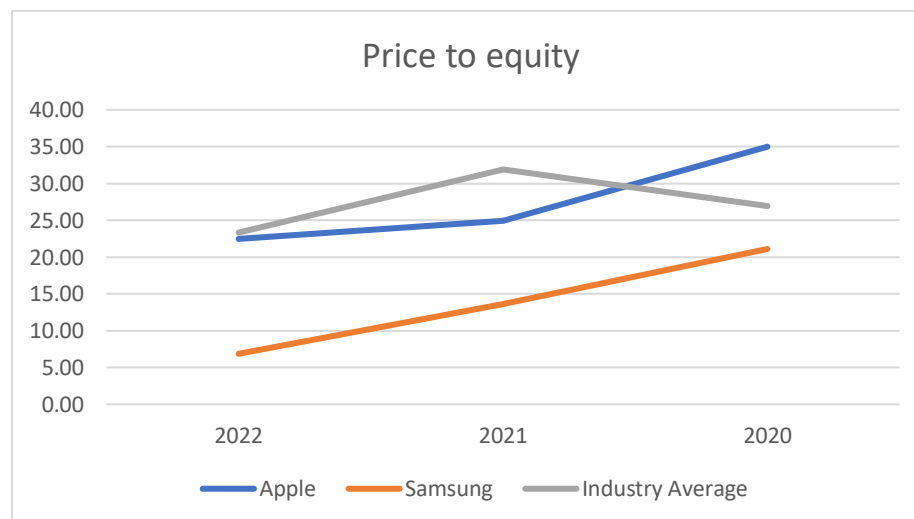
5.0 Investor/market ratios

5.1 Price to equity (P/E)

The price to equity (P/E) ratio measures a company's share price relative to its earnings per share (EPS). Often called the price or earnings multiple, the P/E ratio helps assess the relative value of a company's stock. The P/E ratio is one of the most widely used by investors and analysts reviewing a stock's relative valuation. It helps to determine whether a stock is overvalued or undervalued. It's handy for comparing a company's valuation against its historical performance, against other firms within its industry, or the overall market. Generally, the higher the P/E ratio, the more overvalued a company is considered to be, and a lower value of P/E the cheaper the company be considered.

| Price to equity | 2022 | 2021 | 2020 |
|------------------|-------|-------|-------|
| Apple | 22.47 | 24.96 | 34.99 |
| Samsung | 6.86 | 13.6 | 21.1 |
| Industry Average | 23.33 | 31.90 | 26.91 |

It can be seen from the data, that Apple's P/E ratio is relatively high, and as of 2022, the P/E was 22.47, showing that the value of the company was 22.47 times greater than the earnings of the company for the same period. It can also be seen that the P/E has gradually declined over the period of analysis, mainly driven by increases in earnings, showing an improving situation for the company.



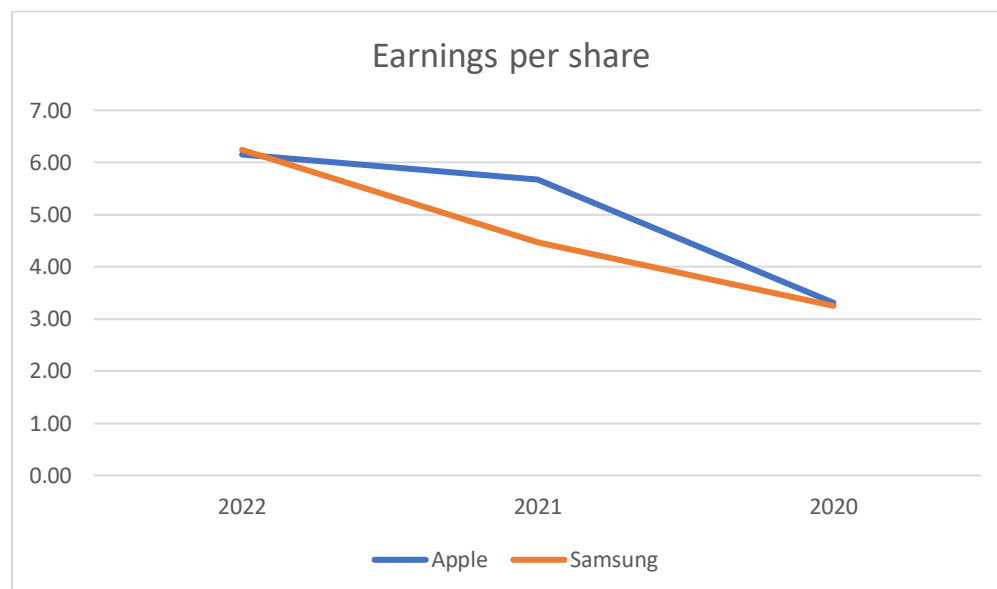
When comparing Apple's P/E ratio to Samsung and the Industry average, it can be seen that Apple's P/E ratio is much higher than that of Samsung, while it is more in line with the industry average. It can be seen that Apple is not alone in the decreasing P/E ratio for period analysis, as Samsung and the Industry average both display net decreases over the period.

5.2 Earnings Per Share (EPS)

Earnings per share (EPS) is a measure of a company's profitability that indicates how much profit each outstanding share of common stock has earned. It's calculated by dividing the company's net income by the total number of outstanding shares. The higher a company's EPS, the more profitable it is considered to be. Earnings per share is one of the most important financial metrics employed when determining a firm's profitability on an absolute basis.

| Earnings per share | 2022 | 2021 | 2020 |
|--------------------|------|------|------|
| Apple | 6.15 | 5.67 | 3.31 |
| Samsung | 6.24 | 4.47 | 3.25 |

It can be seen that Apple's earning per share was 6.15, as of 2022, and has shown a large trend of increase over the period of analysis. This shows that Apple is a strong position when considering its earnings per share.



Over the period of analysis, it can be seen that both Apple's and Samsung's EPS have shown a considerable increase over the period of analysis. In directly comparing the EPS of the two companies, it can be seen that the EPS of both companies are relatively similar, and only very small differences are present between the two.

5.3 Price to book value (PBV)

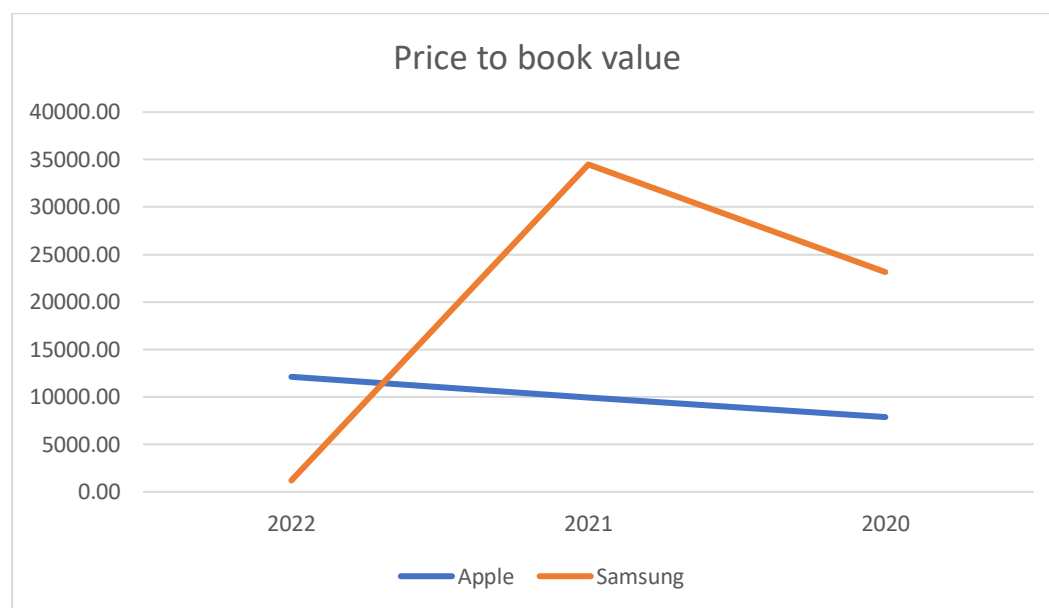
Price-to-book value (PBV) is the ratio of the market value of a company's shares (share price) over its book value of equity. The book value of equity, in turn, is the value of a company's assets expressed on the balance sheet. The book value is defined as the difference between the book value of assets and the book value of liabilities. Many investors use the price to

book value to compare a firm's market capitalization to its book value and locate undervalued companies.

A PBV ratio with lower values, signals to investors that a stock may be undervalued. In other words, the stock price is trading at a lower price relative to the value of the company's assets. However, it could also indicate that the company's asset value is overstated, or the return on assets and overall profitability could also lead to a lower PBV.

| Price to book value | 2022 | 2021 | 2020 |
|---------------------|----------|----------|----------|
| Apple | 12118.24 | 9965.41 | 7875.41 |
| Samsung | 1198.318 | 34484.35 | 23132.05 |

When analysing Apple's PBV, it can be seen that Apple's PBV is high, showing that the market values Apple's value, and is willing to pay higher than usual multiples for the assets of Apple, as they are utilised to generate a high return. It can also be seen that there is a strong positive trend over the period, showing that the price of Apple's assets has grown considerably over the period of analysis.



When comparing Apple's PBV with Samsung, it can be seen that Apple's PBV was considerably lower than that of Samsung in the 2020 and 2021 period, Samsung's sharp decline in 2022 resulted in Apple having a higher PBV in 2022, and while Samsung's PBV has shown a declining trend over the period, Apples PBV has shown moderate increases.

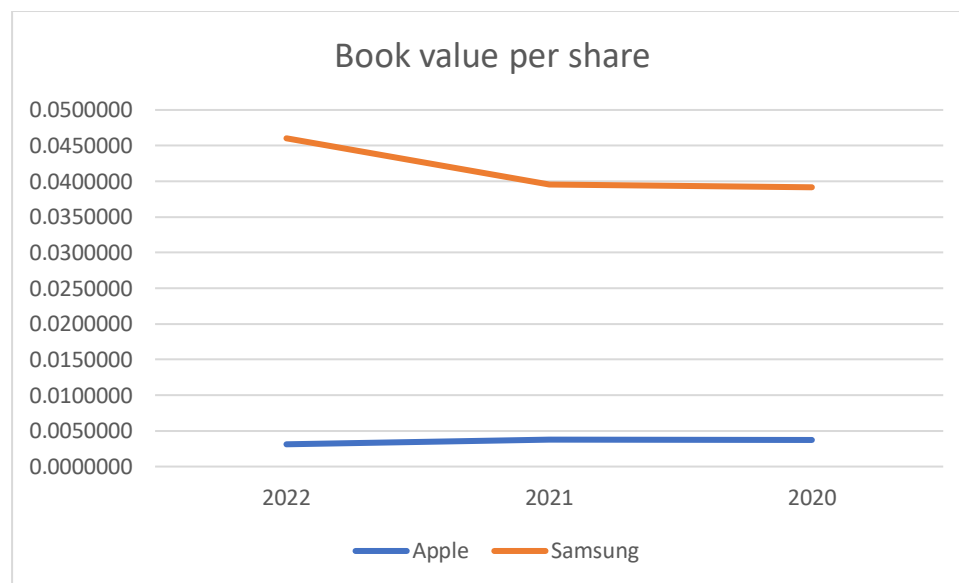
5.4 Book value per share (BV)

Book value per share (BV) measures the book value of a firm on a per-share basis. BVPS is found by dividing equity available to common shareholders by the number of outstanding shares. Book value equals a firm's total assets minus its total liabilities. The book value per share (BV) helps investors gauge whether a stock price is undervalued by comparing it to the

firm's market value per share. The higher the BV, the more undervalued a company can be considered, while a lower BV is generally considered to be more overvalued by comparison.

| Book value per share | 2022 | 2021 | 2020 |
|----------------------|-----------|-----------|-----------|
| Apple | 0.0031248 | 0.0037776 | 0.0037655 |
| Samsung | 0.0460243 | 0.0395569 | 0.0391577 |

When analysing Apple's BV, it can be seen that Apple's BV is very low, suggesting a high value of Apple's assets, as a result of its high ROA and profitability. It can also be seen that Apple's BV has shown a net decrease over the period of analysis, meaning that the company has become more overvalued, and the company has continued to perform well.



When comparing Apple's BV with that of Samsung, it can be seen that Apple's BV is much lower, and while Samsung has shown an increasing trend over the period of analysis, Apple's BV has decreased further over the same period. From this we can conclude that Apple's lower book value shows it is favoured by investors due to the high profitability of the company, while in the event of insolvency Apple's investors will receive a much lower payout than those of Samsung on a per share basis, however unlikely this event may be.

5.5 Dividend payout ratio

The dividend payout ratio is the total amount of dividends that a company pays to shareholders relative to its net income. Put simply, this ratio is the percentage of earnings paid to shareholders via dividends. The amount not paid to shareholders is retained by the company to pay off debt or to reinvest in its core operations. The dividend payout ratio is 0% for companies that do not pay dividends and 100% for companies that pay out their entire net income as dividends.

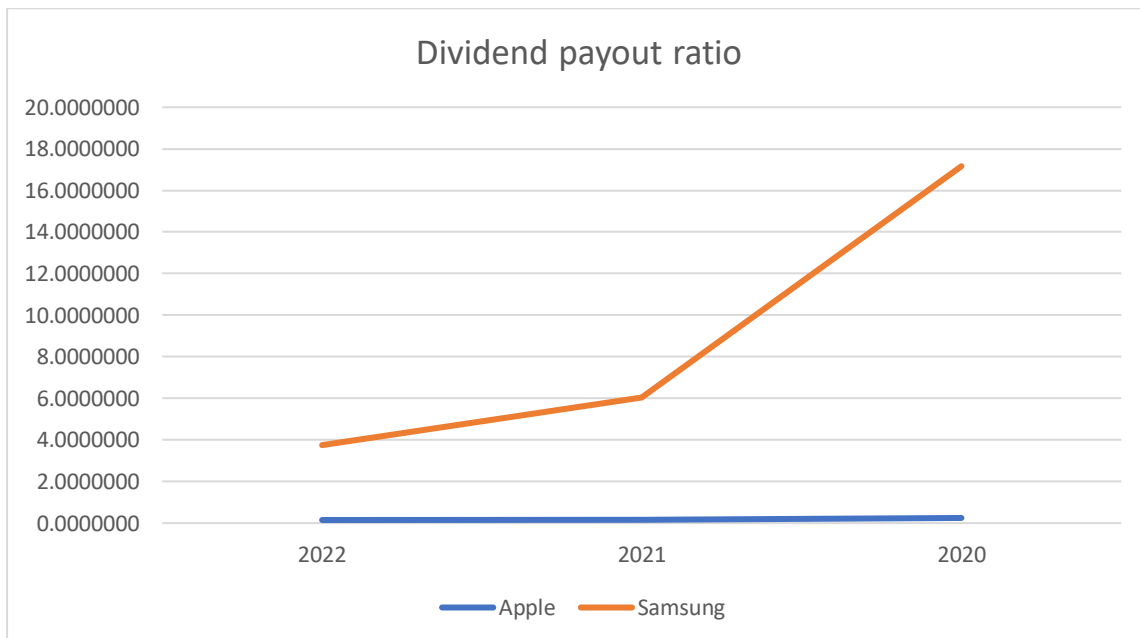
A high dividend payout ratio means that the company is reinvesting less money back into its business, while paying out relatively more of its earnings in the form of dividends. Such

companies tend to attract income investors who prefer the assurance of a steady stream of income to a high potential for growth in share price.

A low dividend payout ratio means that the company is reinvesting more money back into expanding its business. By virtue of investing in business growth, the company will likely be able to generate higher levels of capital gains for investors in the future. Therefore, these types of companies tend to attract growth investors who are more interested in potential profits from a significant rise in share price, and less interested in dividend income.

| Dividend payout ratio | 2022 | 2021 | 2020 |
|-----------------------|-----------|-----------|-----------|
| Apple | 0.1479675 | 0.1534392 | 0.2477341 |
| Samsung | 3.7516026 | 6.0447427 | 17.163077 |

Analysing Apple's dividend payout ratio, it can be seen that Apple's ratio is low, and has shown a decreasing trend over the period of analysis. This is not due to a lack of capital generated by the company, but as a result of reinvestment policy.



When compared with Samsung, Apple's dividend payout ratio is much lower, while both companies have shown a decreasing trend over the period of analysis.

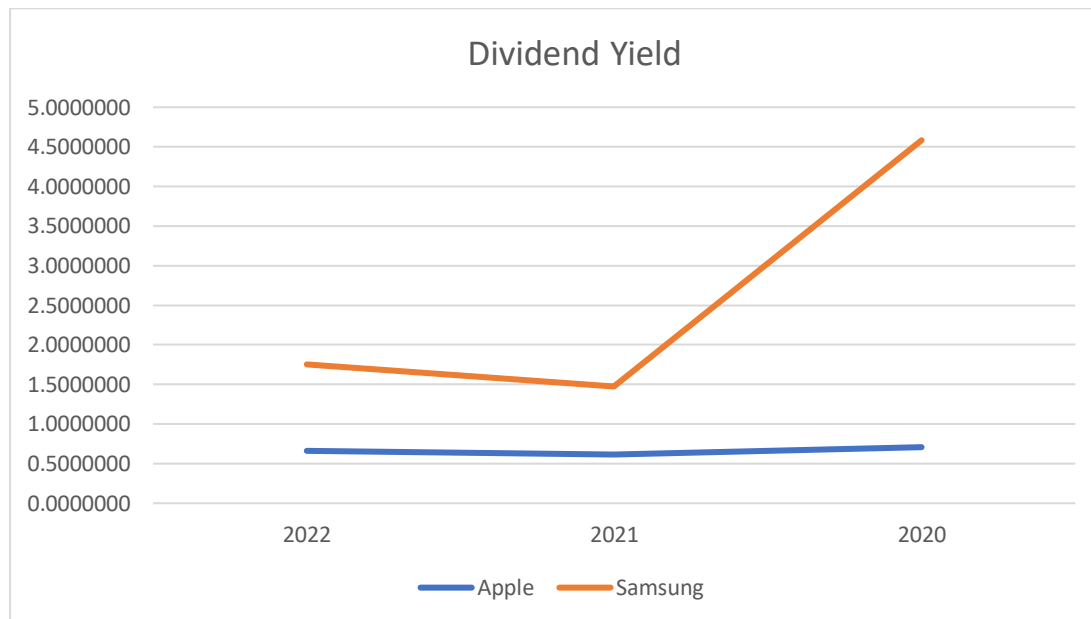
5.6 Dividend Yield

The dividend yield is a financial ratio that shows how much a company pays out in dividends each year relative to its stock price. The reciprocal of the dividend yield is the total dividends paid/net income which is the dividend payout ratio. The dividend yield is an estimate of the dividend-only return of a stock investment. Assuming the dividend is not raised or lowered, the yield will rise when the price of the stock falls. Conversely, it will fall when the price of

the stock rises. Because dividend yields change relative to the stock price, it can often look unusually high for stocks that are falling in value quickly.

| Dividend Yield | 2022 | 2021 | 2020 |
|----------------|-----------|-----------|-----------|
| Apple | 0.6584660 | 0.6148410 | 0.7080563 |
| Samsung | 1.7535581 | 1.4742873 | 4.5834018 |

Apple's dividend yield has remained relatively stable throughout the period of analysis, as both the share price and the dividend payout have both increased over the period of analysis in relatively equal proportions.



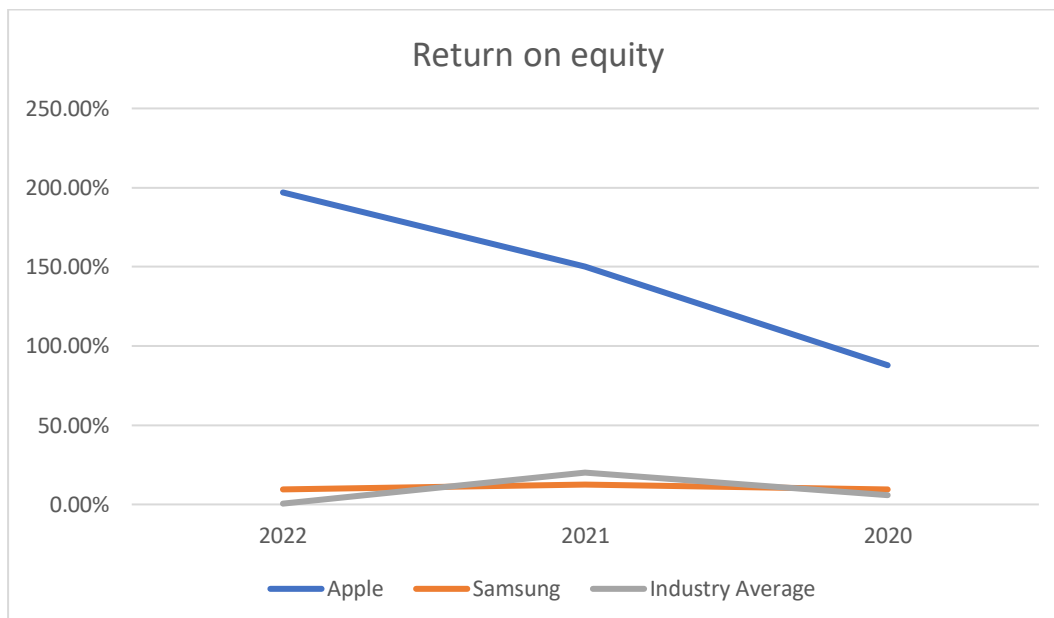
When comparing Apple's dividend yield with that of Samsung, it can be seen that while Apple's dividend yield has remained relatively constant over the period of analysis, Samsung's dividend yield has decreased considerably over the same period, while Samsung's dividend yield is still higher overall in absolute terms. Samsung's dividends for the period have decreased drastically, and is driving the decrease in dividend yield ratio.

0.1 Return on equity (ROE)

Return on equity (ROE) is a measure of a company's financial performance. It is calculated by dividing net income by shareholders' equity. Because shareholders' equity is equal to a company's assets minus its debt, ROE is a way of showing a company's return on net assets. Return on equity is considered a gauge of a corporation's profitability and how efficiently it generates those profits. The higher the ROE, the more efficient a company's management is at generating income and growth from its equity financing.

| Return on equity | 2022 | 2021 | 2020 |
|------------------|---------|---------|--------|
| Apple | 196.96% | 150.07% | 87.87% |
| Samsung | 9.63% | 12.53% | 9.44% |
| Industry Average | 0.50% | 20.10% | 6.00% |

When looking at Apple's return on equity, it can be seen that Apple's ratio is extremely high, as a result of its ability to generate high net incomes with extremely low shareholders' equity. The low shareholders' equity is a driving force in this high ROE, as we have discussed previously, Apple has relatively low assets used to generate its income. It can also be seen that over the period of analysis Apple's ROE has shown a trend of large increases, meaning that the profitability of the company has grown considerably over the period.



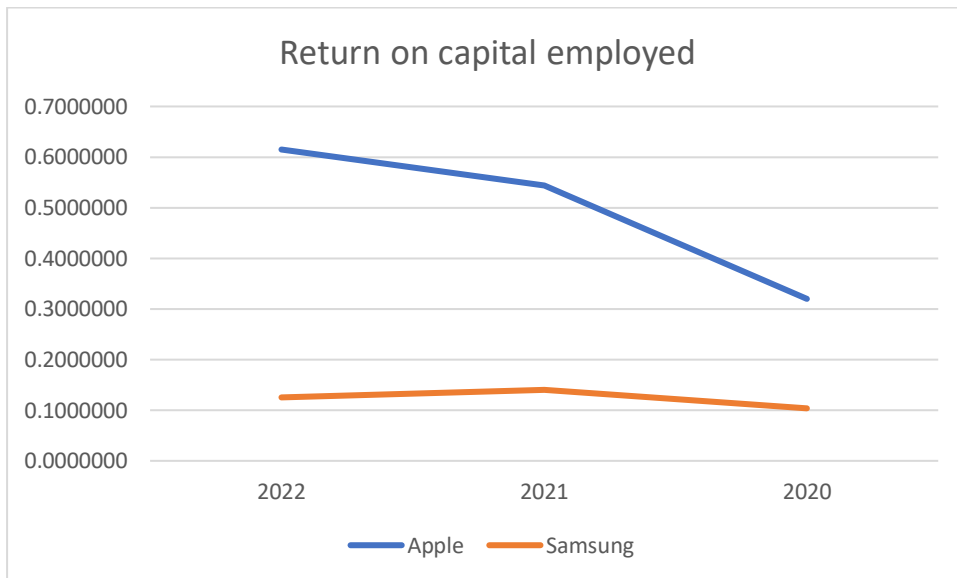
When comparing Apple's ROE with its peers, it can be seen that Apple's ROE is well above both Samsung and the industry average. And while Samsung has seen a small net increase over the period, and the industry average has seen a net decrease, Apple has continued to grow its ROE and displays the clear competitive advantage of the company.

5.7 Return on capital employed (ROCE)

Return on capital employed (ROCE) is a financial ratio that can be used to assess a company's profitability and capital efficiency. In other words, this ratio can help to understand how well a company is generating profits from its capital as it is put to use. ROCE is calculated by dividing earnings before interest and taxes by the capital employed. Unlike other fundamentals such as return on equity (ROE), which only analyses profitability related to a company's shareholders' equity, ROCE considers debt and equity. This can help neutralize financial performance analysis for companies with significant debt.

| Return on capital employed | 2022 | 2021 | 2020 |
|----------------------------|-----------|-----------|-----------|
| Apple | 0.6149779 | 0.5443041 | 0.3199784 |
| Samsung | 0.1253157 | 0.1402247 | 0.1036986 |

When analysing Apple's ROCE, it can be seen that similarly to ROE, Apple's ratio is exceedingly high, and has shown a trend of large increases of the period of analysis.



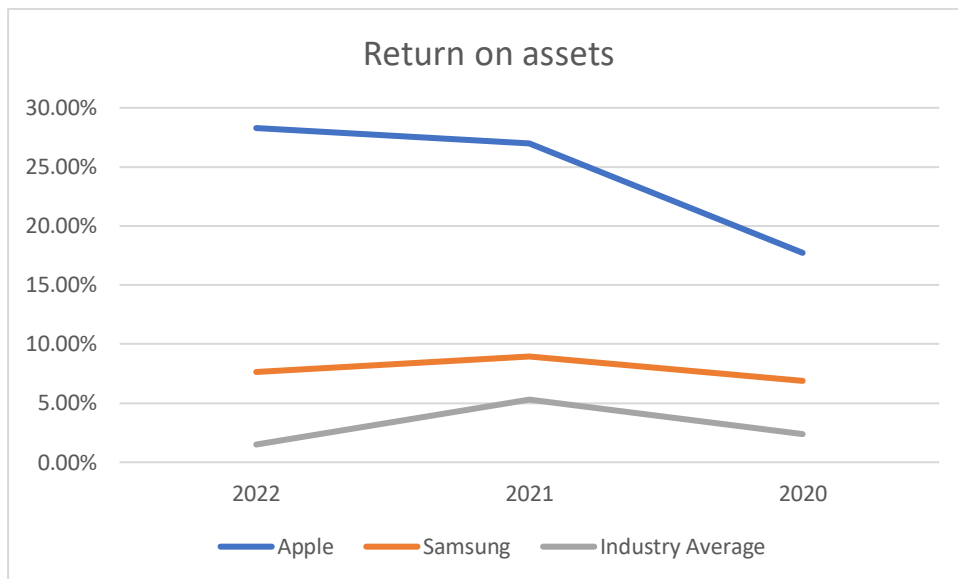
When comparing Apple's ROCE with that of Samsung, it can be seen that Apple's ROCE is much higher, and while Samsung's ratio has remained stable over the period, only showing a modest increase of 0.02, Apple's ROCE has increased considerably in comparison.

0.2 Return on assets (ROA)

Return on assets (ROA) is a profitability ratio that shows how much profit a company is generating from its assets. As such, it is seen as an indicator of how efficiently a company's management is deploying the economic resources it has available. ROA is expressed as a percentage and, in general, the higher the number, the better. Return on assets is calculated as the net income of the company divided by its total assets.

| Return on assets | 2022 | 2021 | 2020 |
|------------------|--------|--------|--------|
| Apple | 28.29% | 26.97% | 17.73% |
| Samsung | 7.62% | 8.95% | 6.89% |
| Industry Average | 1.50% | 5.30% | 2.40% |

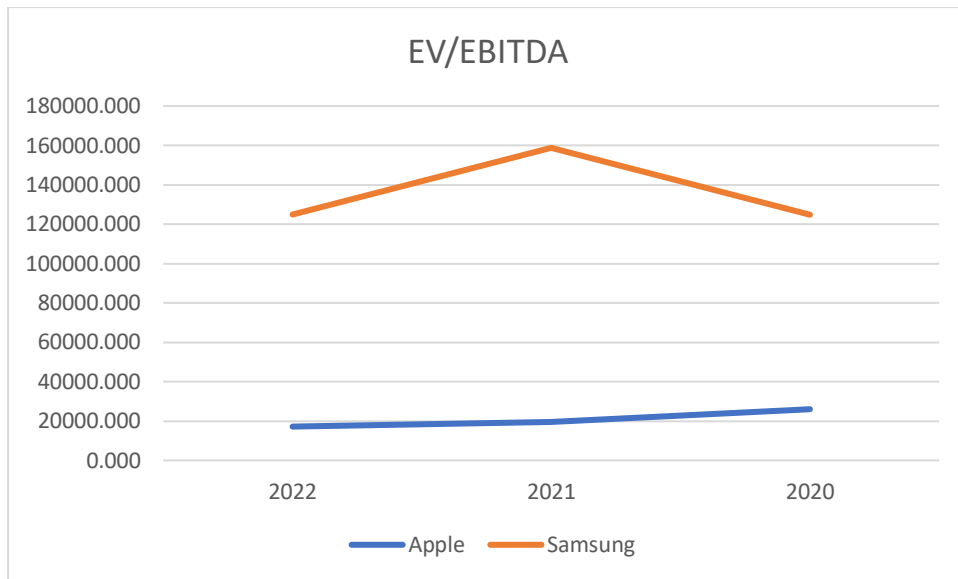
When analysing Apple's ROA, it can be seen that similarly to the above ratio's discussed, Apple's ROA is extremely high, and has shown a trend of large increase over the period of analysis.



When comparing Apple's ROA with its competitors, Apple's ROA is well above both Samsung and the industry average, and while Samsung has remained relatively stable showing only a modest increase, and the industry average has decreased slightly, while Apple's ROA has grown substantially over the same period.

5.8 Enterprise value to EBITDA (EV/EBITDA)

EV/EBITDA is a ratio that compares a company's Enterprise Value (EV) to its Earnings Before Interest, Taxes, Depreciation & Amortization (EBITDA). The EV/EBITDA ratio is commonly used as a valuation metric to compare the relative value of different businesses. Investors mainly use a company's enterprise multiple to determine whether a company is undervalued or overvalued. A low ratio relative to peers or historical averages indicates that a company might be undervalued and a high ratio indicates that the company might be overvalued.



When comparing Apple's EV/EBITDA with that of Samsung, it can be seen that Apple's ratio is much lower than that of Samsung, and has shown a decreasing trend over the period of analysis, while Samsung has remained relatively stable showing a very small net increase over the period of analysis.

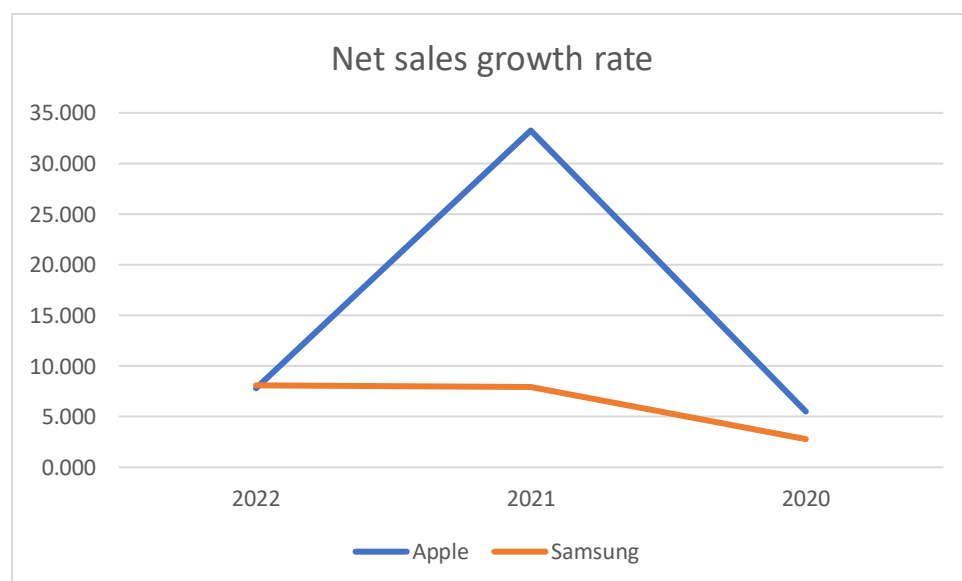
6.0 Growth rates

6.1 Net sales growth rate

The net sales growth rate is an important metric, which shows the percentage growth rate of net sales, showing how capable a company is of growing its sales over time. It is calculated by subtracting the prior period total sales from the current period net sales, and dividing this by the previous period net sales, to calculate the growth rate, and finally multiplied by 100 to be expressed as a percentage.

| Net sales growth rate | 2022 | 2021 | 2020 |
|-----------------------|-------|--------|-------|
| Apple | 7.794 | 33.259 | 5.512 |
| Samsung | 8.092 | 7.950 | 2.781 |

When analysing Apple's net sales growth rate, it can be seen that the company's overall percentage is at a healthy level, and can be seen to have shown a net decrease over the period of analysis, while the value of 33.25% of 2021 is large increase, I do not consider it an outlier, as the values of 2019 and 2020 are of a similar level, and the total sales for 2022 in again higher than the large increase of 2021, suggesting a permanent large increase in Apple's net sales was achieved in this period.



When comparing Apple's net sales growth rate with its competitor Samsung, it can be seen that Apple's net sales growth rate is higher overall for the period, suggesting that Apple's ability to grow its sales rate is higher, and will result in the total net sales growing at an ever-increasing rate when the two are compared. This ability to grow its sales at such a rate, when Apple is already such a dominant force within the industry is a testament to its competitive advantage.

6.2 Products growth rate

Similarly to net sales growth rate, Product growth rate calculates the growth rate of sales for the company only for its products sold, and discounts sales of services from the calculation. It is calculated in the same way as net sales growth rate, instead using the data for product sales only as opposed to the overall sales figures.

| | | | |
|---------------------------|-------------|-------------|-------------|
| 6.1 Net sales growth rate | 7.793787604 | 33.25938473 | 5.512080377 |
| 6.2 Products growth rate | 6.323976435 | 34.72074366 | 3.209231215 |
| 6.3 Services growth rate | 14.18195104 | 27.25970838 | 16.15216781 |

When analysing Apple's product sales rate growth, it can be seen that product sales have also shown considerable growth, while slightly under the total sales growth of 2020 and 2022, the 2021 period of product growth exceeds the total sales growth rate, showing that this large increase in sales was mostly driven by products sales.

6.3 Services growth rate

Services growth rate, similar to both net sales growth rate and products growth rate, looks at the growth rate of services sales only. It is calculated in the same way, using the sales data for services only.

| | | | |
|---------------------------|-------------|-------------|-------------|
| 6.1 Net sales growth rate | 7.793787604 | 33.25938473 | 5.512080377 |
| 6.2 Products growth rate | 6.323976435 | 34.72074366 | 3.209231215 |
| 6.3 Services growth rate | 14.18195104 | 27.25970838 | 16.15216781 |

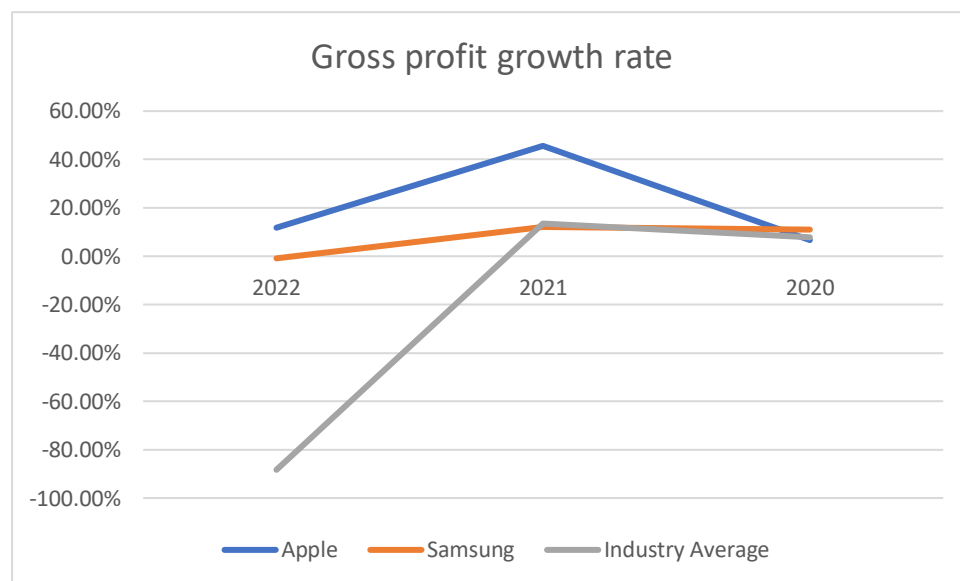
Analysing Apple's sales growth rate, it can be seen that the overall rate of growth is much higher than both the product growth rates and the net sales growth rate. In both 2020 and 2022, it can be seen that the Services growth far exceeds both net sales and products sales, showing that services sales are the fastest growing sales segment. In 2021 however, the services sales increase, while still high, was proportionally lower than the product sales, show that the large increase in the period of 2021 was driven proportionally more by product sales as opposed to services sales. Overall, it can be seen that while product services remain the majority of the share of total sales and are growing strongly over the period of analysis, services growth rates, while representing a smaller share of total sales, are growing at a much faster rate, and can be seen to be a quickly growing segment of Apple's overall business and may be key in ensuring continued growth into the future.

6.4 Gross profit growth rate

The gross profit growth rate shows the percentage growth rate of gross margin, showing how capable a company is of growing its profit margin over time. It is calculated by subtracting the prior period gross margin from the current period gross margin, and dividing this by the previous margin, to calculate the growth rate, and finally multiplied by 100 to be expressed as a percentage.

| Gross profit growth rate | 2022 | 2021 | 2020 |
|--------------------------|---------|--------|--------|
| Apple | 11.74% | 45.62% | 6.67% |
| Samsung | -0.89% | 12.10% | 11.01% |
| Industry Average | -88.34% | 13.50% | 7.88% |

Apple's gross profits have grown considerably over the period of analysis, and this is represented in the gross profit growth rate, growing considerably over the period, with gross profits growing considerably in the period of 2021, the same as can be seen in the net sales growth rate.



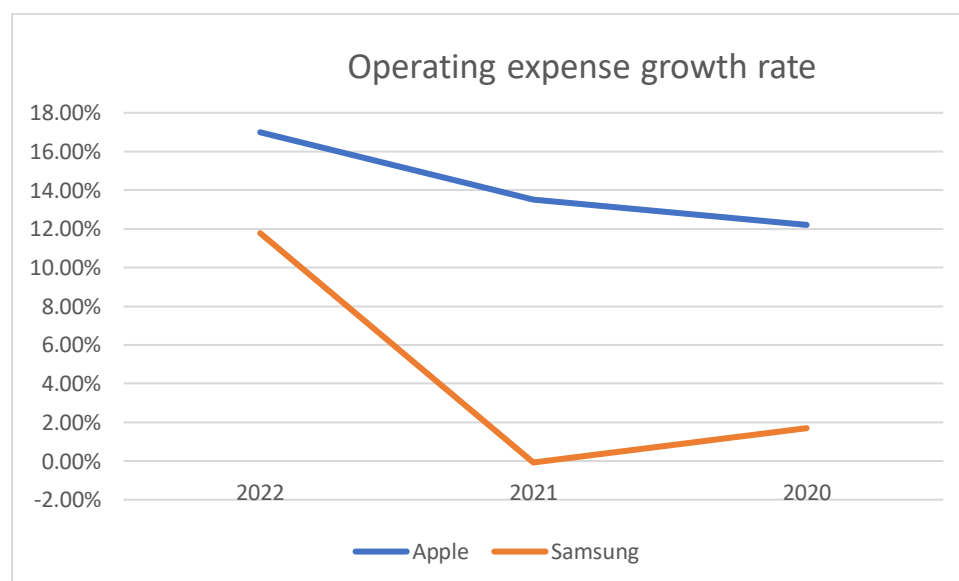
When compared with its competitors, it can be seen that Apple's gross profit growth rate is higher than both Samsung and the industry average, and while Samsung and the Industry average have shown net decreases over the period, Apple has continued its trend of increasing gross profit growth rates, while maintaining rates above its competitors, again highlighting the strength of Apple's business and its competitive advantage over its competitors.

6.5 Operating expense growth rate

Operating expense growth rate calculates the growth in operating expenses of the company. It is calculated by subtracting the prior period operating expense from the current period operating expenses, and dividing this by the previous period operating expense, to calculate the expense growth rate, and finally multiplied by 100 to be expressed as a percentage. In this instance, a lower rate is preferred, as sizeable increases in operating expenses will have a negative impact upon the company's profitability. Although it is important to consider that growing net sales or gross profits considerably in most cases will cause increases in operating expenses, so these additional factors must be considered when analysing the operating expense growth rate.

| Operating expense growth rate | 2022 | 2021 | 2020 |
|-------------------------------|--------|--------|--------|
| Apple | 16.99% | 13.50% | 12.20% |
| Samsung | 11.78% | -0.08% | 1.68% |

When analysing Apple's operating expense growth rate, it can be seen that Apple's operating expenses have shown a modest growth rate over the period, growing at a higher rate than the increase in gross profits, while in absolute terms, the growth in gross margins has surpassed the absolute increases in operating expenses, meaning that in dollar terms the company is still increasing its profits despite the moderate increases in operating expenses.



When compared with its competitor Samsung, Apple's operating expense growth rate is higher, although Samsung has displayed less aggressive growths in its gross profits over the period of analysis, it can be expected that the more rapid growth in Apple's profits would result in a higher operating expense growth rate.

6.6 Research and development growth rate

The research and development growth rate shows the percentage growth rate of research and development spending, showing how much a company is spending on its research and development. It is calculated by subtracting the prior period research and development spending from the current period research and development spending, and dividing this by the previous period research and development spending, to calculate the growth rate, and finally multiplied by 100 to be expressed as a percentage. Although research and development spending are a cost and ultimately subtracts from the earnings of the period, it is ultimately an investment in the future earning potential of the company, and if the management decisions are trusted by the investor this can be seen as one of the most long-term valuable costs a company can incur.

| Research and development growth rate | 2022 | 2021 | 2020 |
|--------------------------------------|--------|--------|--------|
| Apple | 19.79% | 16.86% | 15.63% |
| Samsung | -0.22% | -2.78% | 15.10% |

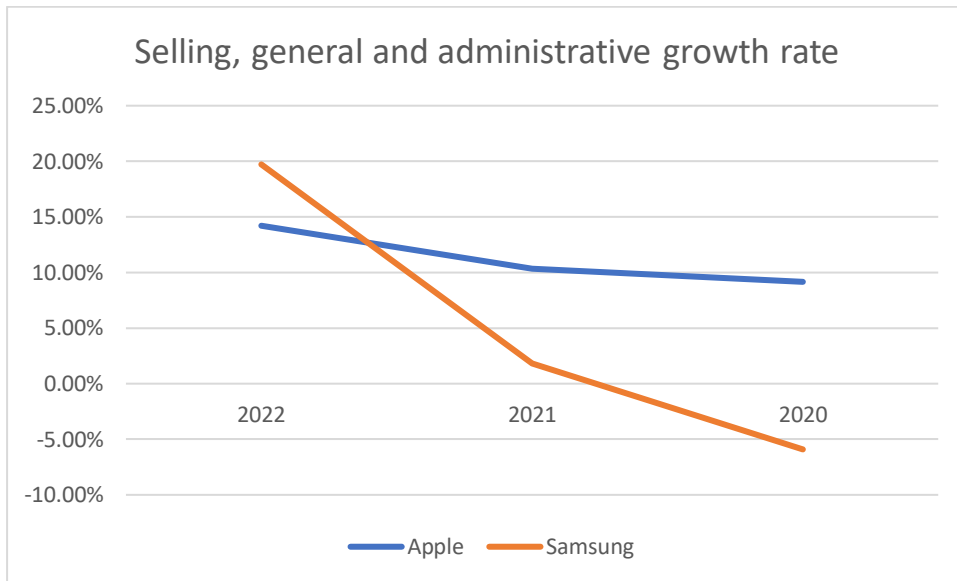
It can be seen that Apple's research and development growth rate is sizeable, and has grown in modest intervals over the period of analysis, showing that the company is keep to dedicate its spare capital to future prospects and its growth, while in comparison, Samsung's research and development spending growth is much less than that of Apple, and while showing a modest increase in 2020, Samsung's research and development spending decreased over the following two periods. Based upon Samsung's balance sheet, it can be seen that cash is not a issue for Samsung, and this trend of decreased research and development spending is a business decision, and the management have decided that greater research and development spending is not needed, while this may result in the company losing its competitive edge in the future, while it should be noted that despite the decreases in spending, Samsung still has a sizeable research and development budget, and it may have been decided by the management that the current budget is sufficient to continue the development of products at a sufficient rate to keep up-to-date with new developments in the market, and therefore further allocations are not needed.

6.7 Selling, general and administrative growth rate

Selling, general and administrative growth rate includes all non-production expenses incurred by a company in any given period. It includes expenses such as rent, advertising, marketing, accounting, litigation, travel, meals, management salaries, bonuses, and more. The selling, general and administrative growth rate shows the percentage growth rate of selling, general and administrative spending, showing how much a company is spending on selling, general and administration. It is calculated by subtracting the prior periods value from the current periods value, and dividing this by the previous periods value, to calculate the growth rate, and finally multiplied by 100 to be expressed as a percentage.

| Selling, general and administrative growth rate | 2022 | 2021 | 2020 |
|-------------------------------------------------|--------|--------|--------|
| Apple | 14.20% | 10.33% | 9.16% |
| Samsung | 19.72% | 1.80% | -5.91% |

When analysing Apple's selling, general and administrative growth rate, it can be seen that it has increased gradually over the period of analysis, growing at a slower rate than both the operating expenses, and the research and development spending. This can be expected as sizeable increases in gross margins have occurred over the period, and this is likely to incur additional expenses.



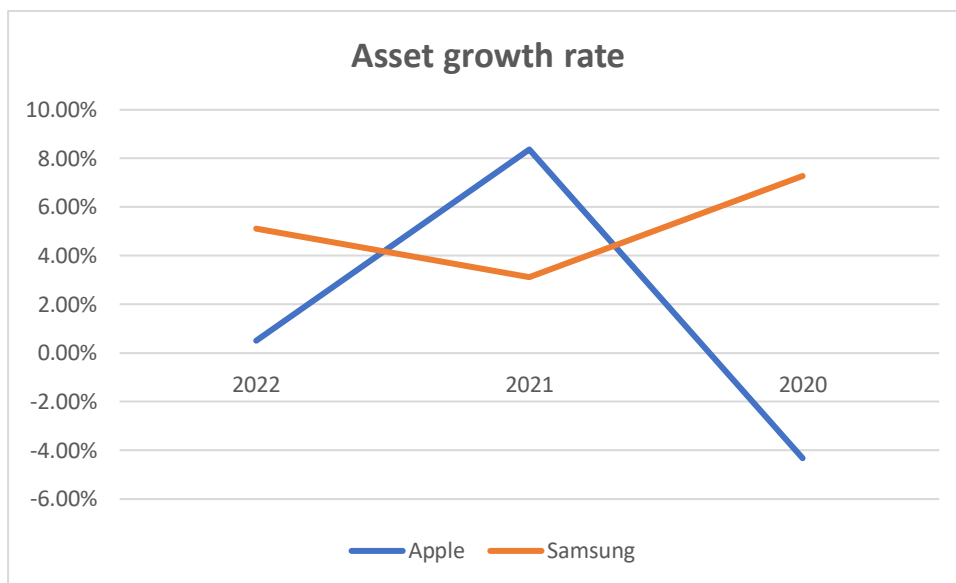
When compared with its competitor Samsung, it can be seen that Apple's gross margin has grown considerably more than Samsung's overall, in the first two periods Samsung's selling, general and administrative growth rates are well below that of Apple, while in the last period of 2022, Samsung's selling, general and administrative growth rate exceeded that of Apple.

6.8 Asset growth rate

Asset growth rate calculates the growth in assets of the company. It is calculated by subtracting the prior period total assets from the current period total assets, and dividing this by the previous period total assets, to calculate the asset growth rate, and finally multiplied by 100 to be expressed as a percentage. The asset growth rate shows how quickly a company has been growing its assets. Generally, the higher the growth the rate the better, though the figure should not be viewed in isolation. An increasing asset value due to, say, excessive borrowing would not be considered beneficial for shareholders, as this equation only considers the asset side of the balance sheet, it does not take into account any corresponding change in liabilities.

| Asset growth rate | 2022 | 2021 | 2020 |
|-------------------|-------|-------|--------|
| Apple | 0.50% | 8.37% | -4.32% |
| Samsung | 5.11% | 3.12% | 7.28% |

When analysing Apple's asset growth rate, it can be seen that Apple's asset growth rate has stayed relatively stable over the period of analysis, declining slightly in 2020, and showing small increases in 2021 and 2022.



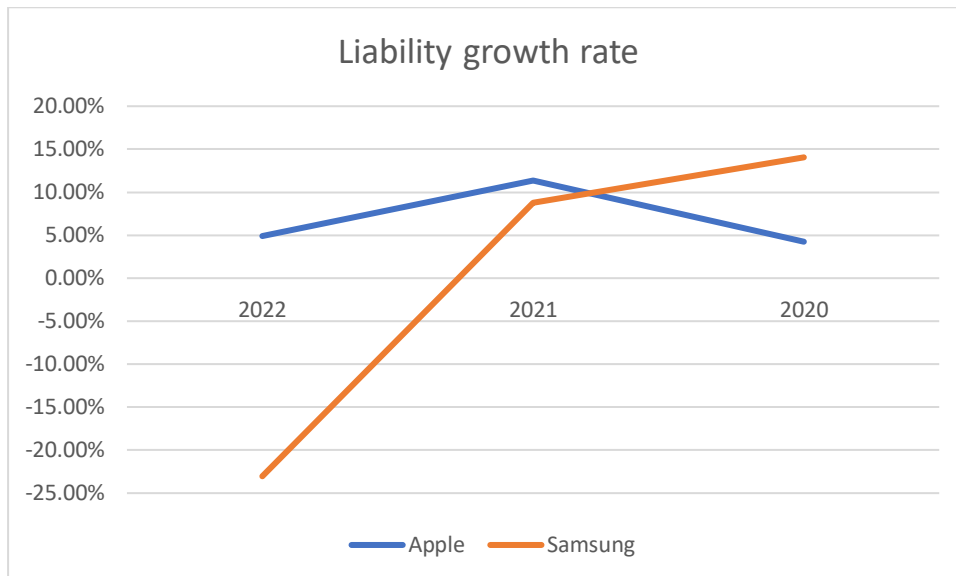
When compared with its competitor Samsung, it can be seen that Samsung's asset growth rate is higher than that of Apple for the period of analysis, and has shown sizeable increases in each period. This is due in large part to Samsung's investments into both property, plant, and equipment, and in increases in both inventories and cash and cash equivalents over the same period. Samsung's business model of investing in these areas are key to its structure, and opposite to Apple who prefer to outsource their logistical and manufacturing processes to third parties, and so this difference in the trend of total assets can be somewhat expected.

6.9 Liability growth rate

Liability growth rate calculates the growth in liabilities of the company. It is calculated by subtracting the prior period total liabilities from the current period total liabilities, and dividing this by the previous period total liabilities, to calculate the liabilities growth rate, and finally multiplied by 100 to be expressed as a percentage. The liabilities growth rate shows how quickly a company has been growing its liabilities. Generally, the higher the liabilities growth the rate the worse it can be considered for the company, although the figure should not be viewed in isolation. An increasing in liabilities could occur for a number of reasons, and it is important to consider these factors when analysing the company's liability growth rate.

| Liability growth rate | 2022 | 2021 | 2020 |
|-----------------------|---------|--------|--------|
| Apple | 4.92% | 11.36% | 4.24% |
| Samsung | -23.04% | 8.80% | 14.05% |

When analysing Apple's liability growth rate, it can be seen that Apple's liabilities have grown at a relatively consistent rate over the period, showing a spike in the growth rate in 2021, in line with the large increase in sales shown in the same period. These liabilities have grown at a greater rate than assets, while still at a lower rate than gross profits, showing that the company still remains in a favourable position.



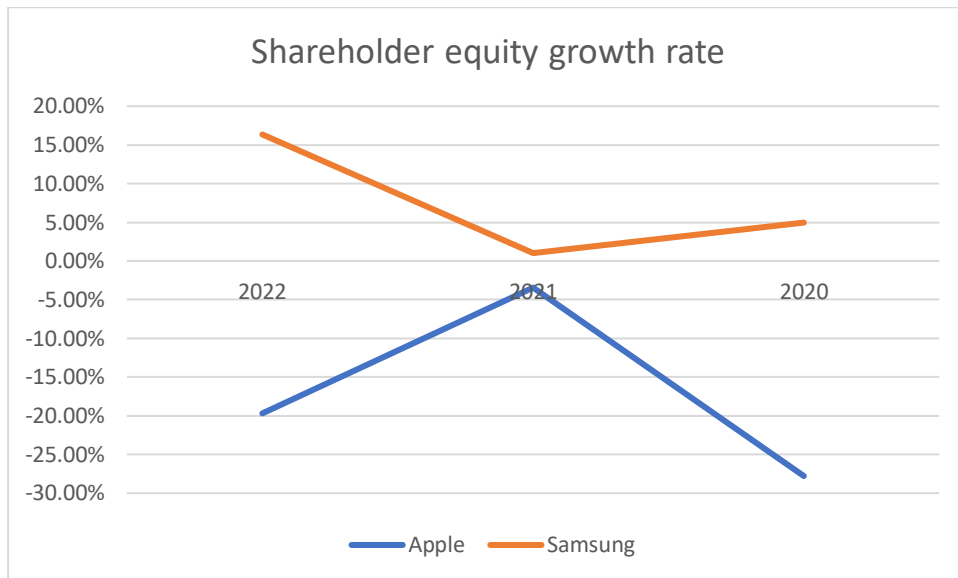
When comparing Apple's Liability growth rate with its competitor Samsung, it can be seen that Apple's liability growth rate is higher than that of Samsung, and has remained stable, while Samsung liabilities have decreased considerably, showing large decreases over the period of analysis. This puts Samsung in a more favourable position, suggesting that it has managed to reduce its liability growth compared to Apple, while Apple has had higher margin growth over the period so it must also be taken into account.

6.10 Shareholder equity growth rate

Shareholder equity is a company's net worth and it is equal to the total dollar amount that would be returned to the shareholders if the company must be liquidated and all its debts are paid off. Thus, shareholder equity is equal to a company's total assets minus its total liabilities. Shareholder equity growth rate calculates the growth in shareholder equity of the company. It is calculated by subtracting the prior period total shareholder equity from the current period total shareholder equity, and dividing this by the previous period total shareholder equity, to calculate the shareholder equity growth rate, and finally multiplied by 100 to be expressed as a percentage.

| Shareholder equity growth rate | 2022 | 2021 | 2020 |
|--------------------------------|---------|--------|---------|
| Apple | -19.68% | -3.44% | -27.79% |
| Samsung | 16.35% | 1.02% | 4.97% |

When analysing Apple's shareholder equity growth rate, it can be seen that Apple's shareholder equity has decreased considerably over the period, show large decreases in 2020 and 2022, and only a modest decrease in 2021, while the decreases in shareholder equity growth rate appear to be slowing over the period of analysis, they are decreasing non the less, showing a less than favourable situation for the company.



When comparing Apple with its competitor Samsung, it can be seen that while Apple's shareholder equity has declined considerably over the period, Samsung's shareholder equity has grown over the period, showing a trend of accelerated growth. Suggesting that overall Samsung's shareholders are in a much better position than those of Apple.

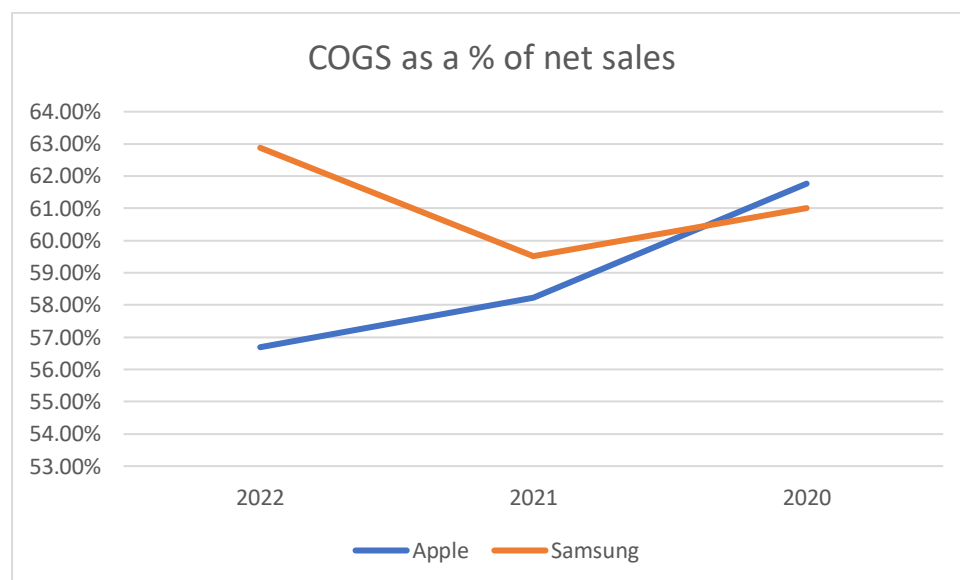
7.0 margins as a % of net sales

7.1 COGS (Cost of goods sold) as a % of net sales

The cost of goods sold (COGS) to net sales ratio is calculated by dividing the COGS by net sales and multiplying by 100. A lower COGS ratio indicates that a business's production costs are lower relative to its sales, while a higher ratio shows that the COGS is higher in relation to sales, and is less favourable, suggesting that the company should aim to reduce costs.

| COGS as a % of net sales | 2022 | 2021 | 2020 |
|--------------------------|--------|--------|--------|
| Apple | 56.69% | 58.22% | 61.77% |
| Samsung | 62.88% | 59.52% | 61.02% |

When analysing COGS as a % of net sales, it can be seen that Apple's ratio has decreased over the period, showing an improving situation for the company. It can be seen that while the COGS has increased for Apple over the period, net sales have increased at a great rate, leading to an improving situation for the company.



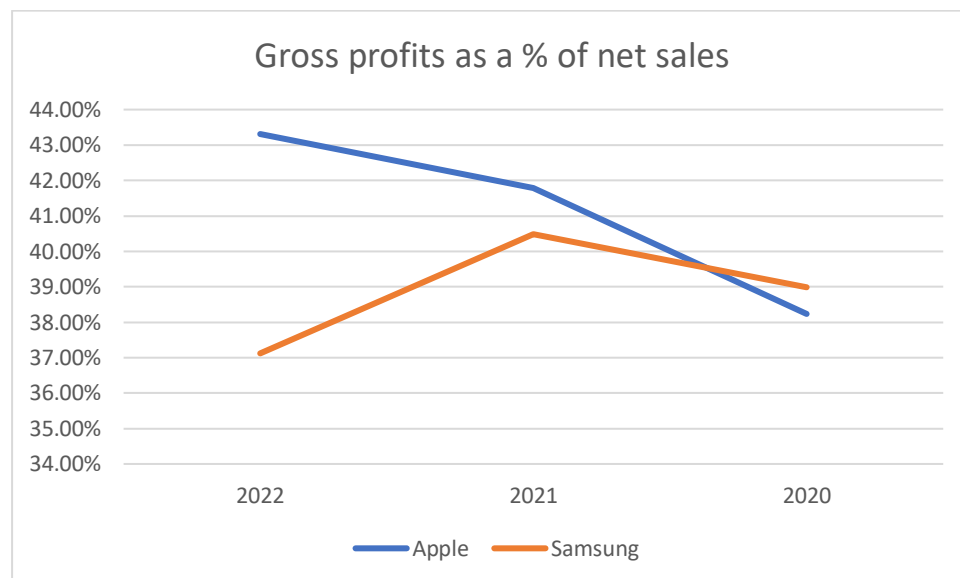
When comparing Apple's COGS as a % of net sales with Samsung, it can be seen that Apple's ratio is overall lower, and has a decreasing trend over the period, as opposed to Samsung's higher ratio and increasing trend. This shows that Apple's situation is favourable to Samsung, and this difference is growing wider.

7.2 Gross profits as a % of net sales

Gross profits as a % of net sales is calculated by dividing the gross margin by total net sales, and multiplying by 100 to be expressed as a percentage. The ratio shows how much profit the company generates as a percentage of its total sales, showing the operational efficiency of the company.

| Gross profits as a % of net sales | 2022 | 2021 | 2020 |
|-----------------------------------|--------|--------|--------|
| Apple | 43.31% | 41.78% | 38.23% |
| Samsung | 37.12% | 40.48% | 38.98% |

Analysing Apple's gross profits as a % of net sales, it can be seen that Apple's gross margin has increased at a greater rate than its increase in total net sales, showing that the profitability of the company has grown over the period of analysis, improving its overall profitability and strengthening its position.



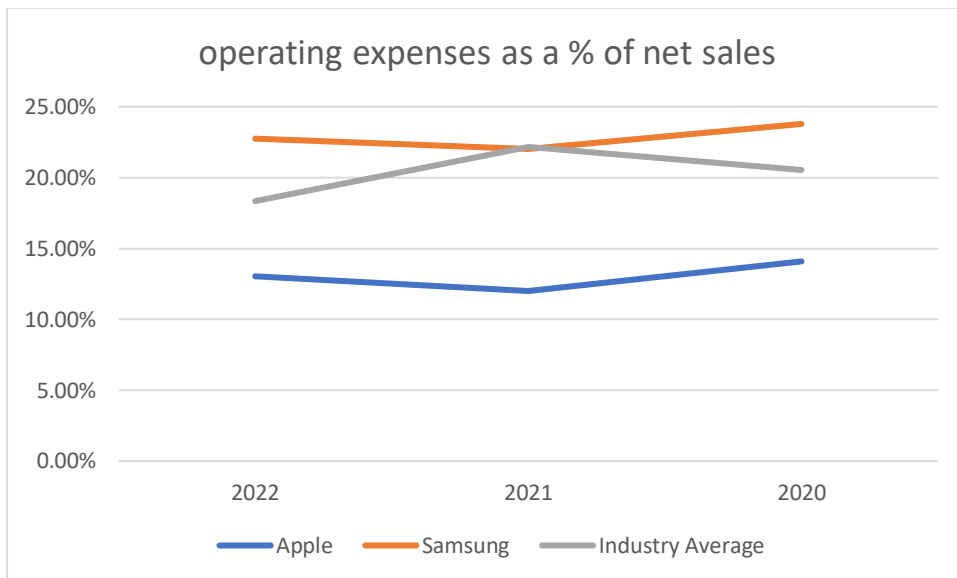
When compared with its competitor Samsung, it can be seen that Apple's gross profits as a % of net sales is higher overall, and has displayed an increasing trend as opposed to Samsung, which has a lower overall ratio and has shown a decreasing trend, showing that Apple's profitability has increased while Samsung's has decreased, showing that Apple's position is more favourable of the two.

7.3 Operating expenses as a % of net sales

operating expenses as a % of net sales is the percentage of a company's net sales that are spent on operating expenses. It is calculated by dividing operating expenses by total sales, then multiplying by 100. It shows how efficient a company's management is at keeping costs low while generating revenue or sales. The smaller the ratio, the more efficient the company is at generating revenue vs. total expenses.

| operating expenses as a % of net sales | 2022 | 2021 | 2020 |
|----------------------------------------|--------|--------|--------|
| Apple | 13.02% | 12.00% | 14.09% |
| Samsung | 22.77% | 22.02% | 23.78% |
| Industry Average | 18.34% | 22.16% | 20.55% |

Analysing Apple's operating expenses as a % of net sales it can be seen that Apple's ratio is relatively low, and has shown a net decrease over the period, suggesting that although both operating expenses and net sales have increased, the relationship between the two has improved, and the overall profitability has been increased, as the cost of increasing each dollar of additional sales has decreased.



Comparing Apple's operating expenses as a % of net sales with its competitors, it can be seen from the data that Apple's ratio is well below both Samsung and the industry average, showing that Apple is able to generate high net sales while incurring lower operating expenses relatively. All three have shown decreases in their operating expenses as a % of net sales ratio in a relatively equal proportion, suggesting that reductions in the ratio have been seen across the sector.

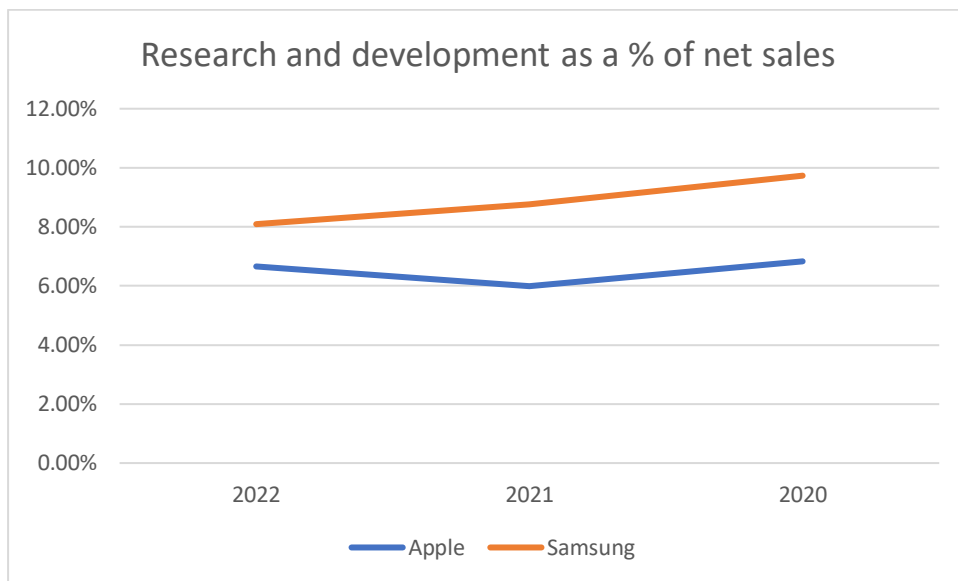
7.4 Research and development as a % of net sales

The research and development as a % of net sales is the percentage of a company's net sales that are spent on research and development. It is calculated by research and development spending by total sales, then multiplying by 100. It shows how much of the company's sales the management dedicate to research and development spending.

| Research and development as a % of net sales | 2022 | 2021 | 2020 |
|----------------------------------------------|-------|-------|-------|
| Apple | 6.66% | 5.99% | 6.83% |
| Samsung | 8.09% | 8.76% | 9.73% |

When analysing Apple's research and development spending as a % of net sales, it can be seen that the ratio has remained relative stable, while Apple has considerably increased

both its total net sales and research and development spending over the period, the relationship between the two has remained relatively stable.



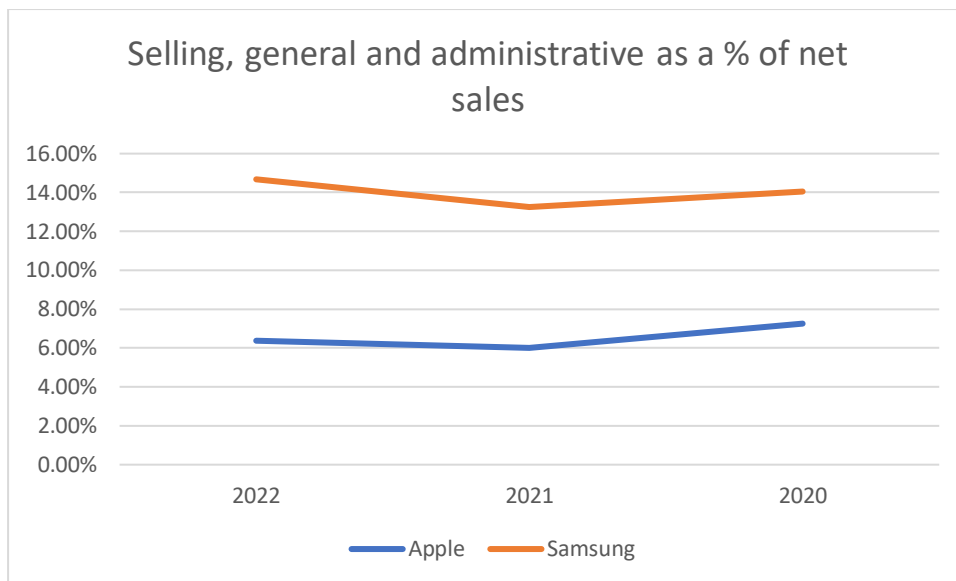
When comparing Apple's research and development as a % of net sales ratio with that of Samsung, it can be seen that Apple's ratio overall is lower than that of Samsung for the period of analysis, while Samsung's share of net sales spend on research and development has decreased over the period, Apple's has increased.

7.5 Selling, general and administrative as a % of net sales

The selling, general and administrative as a % of net sales is the percentage of a company's net sales that are spent on selling, general and administrative. It is calculated by dividing selling, general and administrative spending by total sales, then multiplying by 100. It shows how much of the company's total sales are needed to pay for its selling, general and administrative costs.

| Selling, general and administrative as a % of net sales | 2022 | 2021 | 2020 |
|----------------------------------------------------------------|-------------|-------------|-------------|
| Apple | 6.36% | 6.01% | 7.25% |
| Samsung | 14.68% | 13.25% | 14.05% |

When analysing Apple's selling, general and administrative as a % of net sales, it can be seen that Apple's ratio is relatively low, and as shown a decrease over the period of analysis. This is a favourable situation for the company, as while incurring lower costs, the company managed to grow these costs at a slower rate than their sales growth.



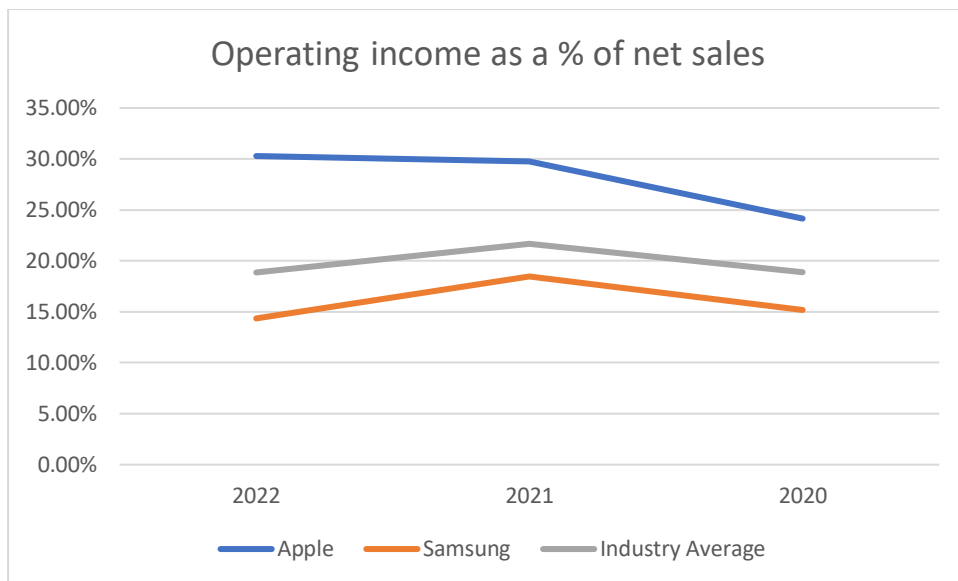
When comparing Apple's selling, general and administrative as a % of net sales ratio with its competitor Samsung, it can be seen that Apple's ratio is lower overall, and while Apple's ratio has shown a net decrease over the period, Samsung's ratio has increased, showing that Apple is in a more favourable position when compared to its competitor, as Apple is able to grow selling, general and administrative costs at a lower rate in relation to its growth in net sales.

7.6 Operating income as a % of net sales

The operating income as a % of net sales measures how much profit a company makes on a dollar of sales after paying for variable costs of production, such as wages and raw materials, but before paying interest or tax. It is calculated by dividing a company's operating income by its net sales and then multiplying by 100 to be expressed as a percentage. Higher ratios are generally better, illustrating the company is efficient in its operations and is good at turning sales into profits. Looking at a company's past operating margins is a good way to gauge whether a company's performance has been getting better. The operating margin can improve through better management controls, more efficient use of resources, improved pricing, and more effective marketing.

| Operating income as a % of net sales | 2022 | 2021 | 2020 |
|--------------------------------------|--------|--------|--------|
| Apple | 30.29% | 29.78% | 24.15% |
| Samsung | 14.35% | 18.47% | 15.20% |
| Industry Average | 18.86% | 21.67% | 18.91% |

When analysing Apple's operating income as a % of net sales, it can be seen from the data that Apple's ratio is high, and has shown consistent growth over the period of analysis, suggesting that the company has been able to maintain and further grow its profitability, showing the strength of the company to generate profits.



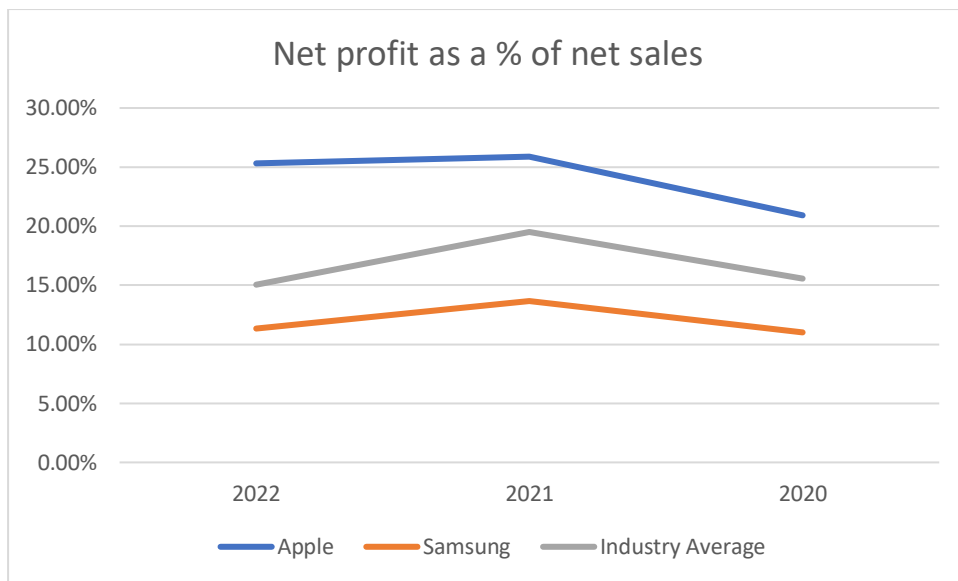
When comparing Apple's operating income as a % of net sales to its competitors, it can be seen that Apple's operating income is much greater than both Samsung and the industry average, and while Samsung and the industry average have shown small net decreases over the period, Apple's operating income as a % of net sales has increased sizeably over the same period, showing Apple's clear advantage in its profitability compared with its competitors.

7.7 Net profit as a % of net sales

Net profit as a % of net sales is a ratio used to calculate the percentage of profit a company produces from its total revenue. It measures the amount of net profit a company obtains per dollar of revenue gained. The net profit margin is equal to net profit divided by total revenue, expressed as a percentage. A high net profit as a % of net sales means that a company is able to effectively control its costs and/or provide goods or services at a price significantly higher than its costs, while a lower net profit as a % of net sales means that a company uses an ineffective cost structure and/or poor pricing strategy.

| Net profit as a % of net sales | 2022 | 2021 | 2020 |
|--------------------------------|--------|--------|--------|
| Apple | 25.31% | 25.88% | 20.91% |
| Samsung | 11.30% | 13.66% | 11.00% |
| Industry Average | 15.04% | 19.51% | 15.55% |

When analysing Apple's net profit as a % of net sales, it can be seen that Apple's ratio is high, and has shown a strong increasing trend over the period of analysis, showing the company's strength, and its ability to generating exceeding higher profits in relation to its net sales, having grown both considerably over the period.



Comparing Apple's net profit as a % of net sales with its competitors, it can be seen that Apple's ratio is well above both the industry average and Samsung, and has shown a strong increasing trend over the period, while Samsung's has remained relatively stable, and the industry average has seen a small net decrease over the period. This again signals the strength of Apple's profitability, and its competitive advantages compared with its peers.

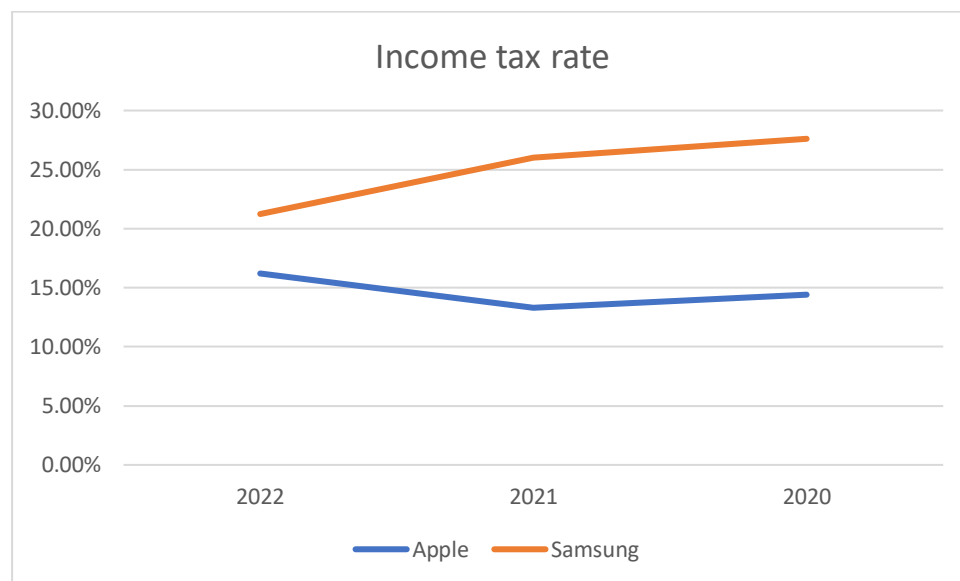
8.0

8.1 Income tax rate

The effective tax rate for a corporation is the average rate at which its pre-tax profits are taxed, while the statutory tax rate is the legal percentage established by law. It is important to analyse the tax rate, as it subtracts from the company's earnings, meaning they have less available capital to allocate to beneficial activities such as acquiring assets, research and development, as well as decreasing capital which can be distributed to shareholders. It is calculated by dividing the provision for income taxes on the balance sheet by its income before provision for income tax, and multiplying by 100 to be expressed as a percentage.

| Income tax rate | 2022 | 2021 | 2020 |
|-----------------|--------|--------|--------|
| Apple | 16.20% | 13.30% | 14.43% |
| Samsung | 21.24% | 26.04% | 27.61% |

When analysing Apple's tax rate, it can be seen that Apple's income tax rate is low, but has increased over the period of analysis. As the company has been able to substantially grow their earnings over the period, it can be expected that their taxes will also rise.



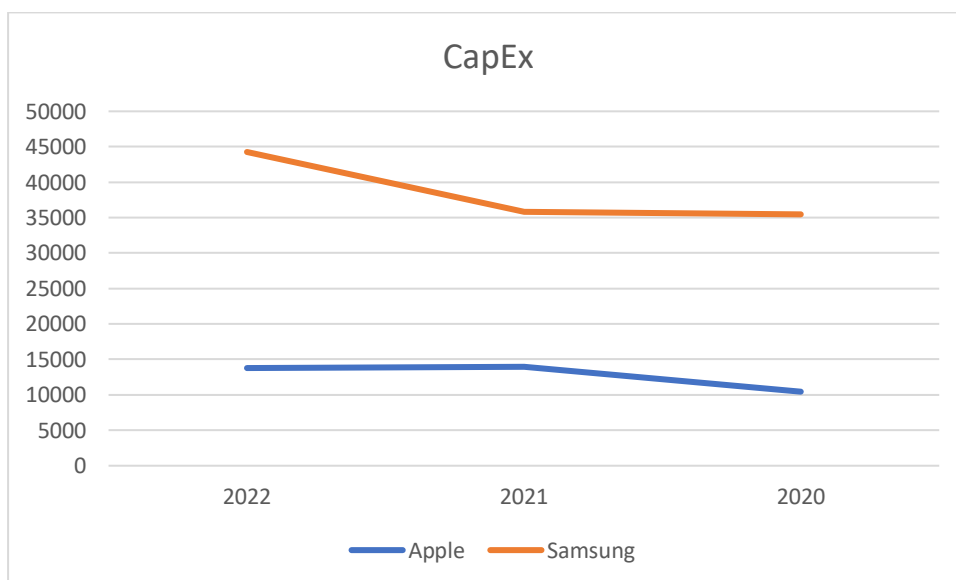
When comparing Apple's income tax rate with its competitor Samsung, it can be seen that Apple's rate of tax is much lower, and while Apple's rate has increased over the period, Samsung's income tax rate has declined, while it can still be considered favourable for Apple, as their lower overall tax rate means that more of their earnings can be retained and deployed in a manner to serve the company and its interests.

8.2 CapEx

Capital expenditures (CapEx) are funds used by a company to acquire, upgrade, and maintain physical assets such as property, plants, buildings, technology, or equipment. CapEx is often used to undertake new projects or investments by a company. This type of financial outlay is made by companies in an effort to increase the scope of their operations or to add some future economic benefit to the operation.

| CapEx | 2022 | 2021 | 2020 |
|---------|-------|-------|-------|
| Apple | 13781 | 13958 | 10444 |
| Samsung | 44263 | 35808 | 35466 |

It can be seen from the data that Apple's capital expenditures have increased over the period of analysis, showing a growing level of spending on CapEx.



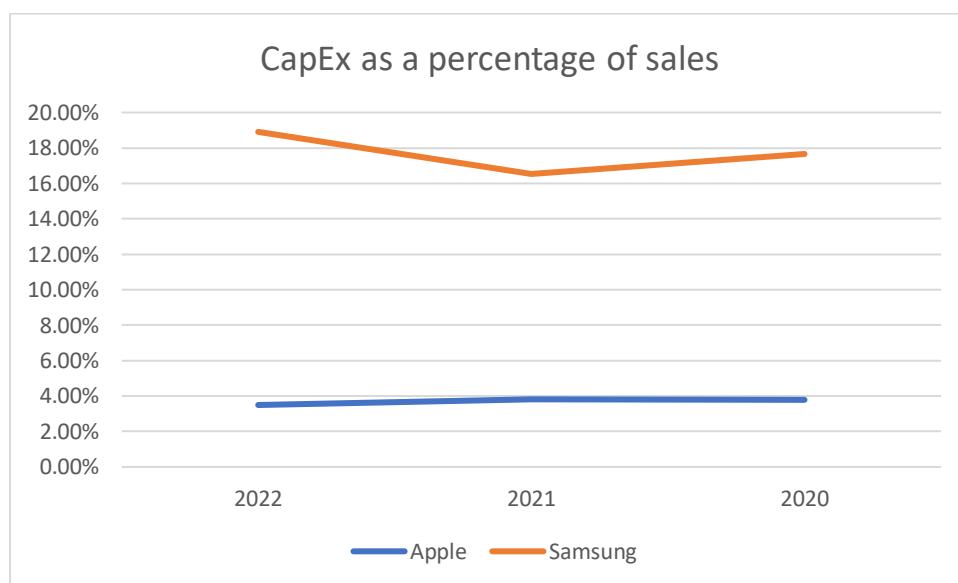
When comparing Apple's CapEx with Samsung, it can be seen that while both have increased their CapEx over the period, Samsung's CapEx is overall much higher in dollar terms, and it should be noted that this may be a result of Samsung's greater ownership of its own supply chain, and the additional spending required to upkeep these business processes.

8.3 CapEx as a percentage of sales

CapEx as a percentage of sales is a ratio which shows the percentage of a company's total sales which it dedicated to CapEx, showing the amount spent on CapEx per dollar earned in sales. It is calculated by dividing CapEx by total sales, and multiplying by 100 to be expressed as a percentage. The CapEx as a percentage of sales can provide valuable insights into a company's investment strategy. A higher ratio could indicate that the company is aggressively investing in its growth. This could be a positive sign if the company operates in a growing industry where there are plenty of growth opportunities.

| CapEx as a percentage of sales | 2022 | 2021 | 2020 |
|--------------------------------|--------|--------|--------|
| Apple | 3.49% | 3.82% | 3.80% |
| Samsung | 18.91% | 16.54% | 17.68% |

When analysing Apple's CapEx as a percentage of sales, it can be seen that the ratio is low, and has shown a small decrease over the period. While such a low CapEx as a percentage of sales ratio could be considered a negative, as the company is making few investments into the future, there can also be positives, as it leaves spare capital to be invested into other areas of the business, and as has been discussed previously, Apple's business strategy of outsourcing large parts of its business operations means that there is less need for Apple to spend such a large amount of capital on CapEx.



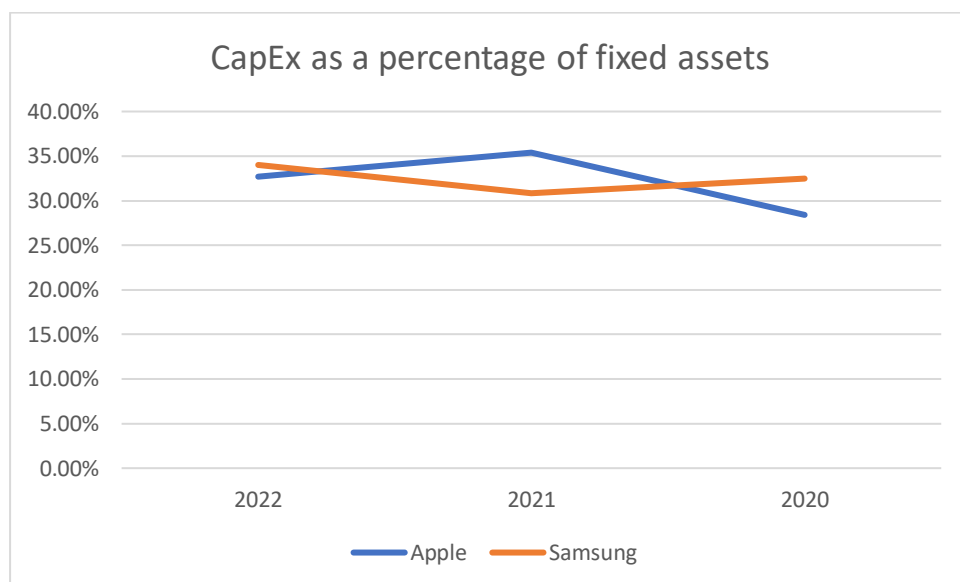
When comparing Apple's CapEx as a percentage of sales with its competitor Samsung, it can be seen that Apple's ratio is much lower, and while Apple's CapEx as a percentage of sales has declined over the period, it can be seen that Samsung's ratio has increased, showing that an ever increases share of sales are dedicated to CapEx by Samsung.

8.4 CapEx as a percentage of fixed assets

CapEx as a percentage of fixed assets is a ratio which shows how much CapEx a company is spending in relation to the value of its fixed assets, showing the amount spent on CapEx per dollar of fixed assets. It is calculated by dividing CapEx by fixed assets, and multiplying by 100 to be expressed as a percentage. It can be a very useful ratio, as it shows CapEx investments in relation to the amount of fixed assets owned by the company, as we have discussed previously, there can be large differences between fixed assets, even in companies operating in similar sectors.

| CapEx as a percentage of fixed assets | 2022 | 2021 | 2020 |
|---------------------------------------|--------|--------|--------|
| Apple | 32.72% | 35.39% | 28.41% |
| Samsung | 34.01% | 30.84% | 32.47% |

When analysing Apple's CapEx as a percentage of fixed assets, it can be seen that Apple's CapEx is relatively high, and has increased over the period of analysis. It can therefore be deduced that Apple is making sizeable CapEx investments relatively to the fixed assets which it owns.



When comparing Apple's CapEx as a percentage of fixed assets with its competitor Samsung, it can be seen that their ratios are relatively similar, showing a relatively similar expenditure on CapEx, as well as both companies showing small increases in their CapEx as a percentage of fixed assets over the period. This ratio confirms out earlier assumptions, that the large differences between the two companies in CapEx and CapEx as a percentage of sales was due to the differences in business structure, and Samsung's ownership of a larger part of its own manufacturing processes as opposed to Apple's, and that when adjusting for this difference using the CapEx as a percentage of fixed assets ratio it can be seen that Apple and Samsung's relative expenditure and the trends are very similar.

Conclusion

In conclusion, it can be seen from the ratio analysis that Apple is in a particularly advantageous position in relation to its financial metrics. Showcasing particular strengths in terms of profitability and supply chain efficiencies, allowing the company to grow and develop its products and services well above rates that can be expected from other companies operating in similar sectors.