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NVIDIA

A Five-Year Odyssey of Innovation and Competition in the Tech Arena

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Introduction

As a giant of the technology industry, Nvidia Corporation is best recognized for its upgraded "graphics processing units (GPUs)", which have transformed "professional visualization" and "gaming". Since its founding in 1993, Nvidia has broadened its scope to encompass data center operations, "automotive technologies", and "artificial intelligence". The business has established itself as a strong rival to industry heavyweights like AMD, Intel, and Apple thanks to its creative products and calculated business decisions.

Part A: A Brief History of NVIDIA for the recent five years

1. Industry

The company belongs to the technology sector they are mostly popular for its Graphics Processing Units (GPUs), semiconductors, and Artificial Intelligence (AI) (Elster *et al.* 2021).

2. Business model

The company of fabless semiconductors created their revenues or profits through increasing sales of SoC (system-on-chip), Licenses for the AI software, and GPUSs (Eun, *et al*, 2021).

3. Marketplace

The company mainly serves the global market for Gaming, automotive, High-performance computing, data science, and professional visualization (Otterness *et al.* 2020).

Gaming: They have provided efficient graphics cards to the customers,

Automotive: They served the SoCs for driver-assistance systems and autonomous vehicles.

High-performance computing and data science: GPUs are mostly used to regulate different scientific and computational works.

Professional visualization: GPUs are mostly used in creative industries, design, and engineering (Finkler, *et al*, 2022).

4. Major competitors

They have many major competitors like Intel, Apple, and AMD. The competitor companies are also very popular with their efficient products. They are well known for their segments like SoCs, CPU, graphics cards, servers, and M-series chips (Kim *et al*. 2021). These competitor companies are competing with NVIDIA through these products.

5. Major events

a. “Mellanox Technologies” acquisition in 2018:

With this acquisition of $6.9 billion, NVIDIA increased its market share in data centres and outstanding performance networking (Yin, *et al,* 2023). The growing needs of HPC applications can no longer be met by traditional CPUs. The creation of HPC solutions that are more productive will be made possible by the combined capabilities of “Mellanox's interconnects” and “NVIDIA's GPUs”.

b. GeForce RTX Super Series launch in 2019:

The latest "GeForce RTX SUPER graphics cards" are presented in this article. These cards feature real-time ray tracing, which is a new technology that enables better effects for lighting in games and offers notable performance increases over their predecessors (Peng *et al*. 2019).

c. In 2020 Jensen Huang became CEO

Jensen Huang, Nvidia's CEO and co-founder, in the expansion of the business. Under his direction, Nvidia's stock price has increased significantly (409% in a year), demonstrating his strategic goal and dedication to innovation. However, new difficulties have emerged as a result of Chinese export limitations (Alhmood *et al*. 2020). Huang's fortune has also increased significantly; his estimated net worth of $68.1 billion places him 21st in the world.

d. Global chip shortage in 2021

Leading American tech corporation NVIDIA attempted to pay an astounding $40 billion to purchase Arm, a well-known British chip creator. Regulators have voiced concerns about the proposed transaction, which has resulted in obstacles and a blockage (Global, 2021).

e. Arm acquisition attempt blocked in 2022

Nvidia reported Q4 2022 profits that were higher than anticipated, with sales of $5 billion, up 61% from the previous year. This implies that despite the continuous GPU scarcity, there remains a high demand for Nvidia's goods.

f. GeForce RTX 40 series announcement in 2023

To maintain NVIDIA's leadership in the gaming business, the most recent graphics cards to hit the market promise notable performance improvements (Song *et al*. 2023).

Part B: Company's financial performance

1. Ratio analysis

Profitability Ratios:	**Formula**	**2024**	**2023**	**2022**	**2021**
Net Profit Margin	Net Income / Total Revenue *EQUATION 1 NET PROFIT MARGIN*	48.85 %	16.19 %	36.23 %	25.98 %
Return on Equity (ROE)	Net Income / Total Equity *EQUATION 2 RETURN ON EQUITY (ROE)*	69.24 %	19.76 %	36.65 %	25.64 %
Return on Investment (ROI)	(Net Income - Dividends) / (Total Assets - Total Liabilities) *EQUATION 3 RETURN ON INVESTMENT*	68.33 %	17.98 %	35.14 %	23.29 %
Liquidity Ratios					
Current Ratio	Total Current Assets / Total Current Liabilities *EQUATION 4 CURRENT RATIO*	4.17	3.52	6.65	4.09
Quick Ratio	(Total Current Assets - Total Inventory) / Total Current Liabilities *EQUATION 5 QUICK RATIO*	3.67	2.73	6.05	3.63
Gearing Ratios					
Debt-to-Equity Ratio	Total Liabilities / Total Equity *EQUATION 6 DEBT-TO-EQUITY RATIO*	0.53	0.86	0.66	0.70

Debt-to-Asset Ratio	Total Liabilities / Total Assets *EQUATION 7 DEBT-TO-ASSET RATIO*	0.35	0.46	0.39	0.41
Efficiency Ratios:					
Asset Turnover Ratio	Total Revenue / Total Assets *EQUATION 8 ASSET TURNOVER RATIO*	0.93	0.65	0.61	0.57
Fixed Asset Turnover Ratio	Total Revenue / Property, Plant, and Equipment (Net) *EQUATION 9 FIXED ASSET TURNOVER RATIO*	11.58	5.56	7.46	5.84

TABLE 1 RATIO ANALYSIS

(Source: Self-created)

The above table reflects the ratio calculation of NVIDIA Corporation for the financial years 2024 to 2021. The above ratio calculation table results are discussed in this section. The above table reflects the calculation of profitability, liquidity, gearing, and efficiency ratios for the year's most recent years. Through this analysis, it can help to make decisions about the business's financial capability. The "profitability ratio" includes "Net Profit Margin", "Return on Equity (ROE)" and "Return on Investment (ROI)". These ratios can help to make decisions about the company's ability to profit from the business. The "Net Profit Margin" ratio calculated in this case for the year 2021 was 25.98%, 2022 was 36.23%, 2023 was 16.19% and for the year 2024 is 48.85%. The ROE ratio in this case for the period 2021 was 25.64%, 2022 was 36.65%, 2023 was 19.76% and for the year 2024 is 69.24. ROI is another important profitability ratio calculated in this case**,** the ROI ratio for the year 2021 was 23.29%, in 2022 was 35.14, in 2023 was 17.98% and for the year 2024 is 68.33% (Micheli *et al*. 2021). These are the main and crucial results concluded from the profitability ratio.

After that, the liquidity ratio is calculated for the most recent periods of NVIDIA Corporation. The liquidity position of the company is concluded from the liquidity ratio calculation. This ratio involves the "Current Ratio" and "Quick Ratio", these ratios help to decide the company's liquidity position. For the year 2021, the ratio was 4.09, in 2022, 6.65, in 2023, the ratio was 3.51 in 2024 the "current ratio" is 4.17, in the previous period was 3.51, and in. The Quick ratio is also calculated in this case,

the ratio concluded for the year 2021 the ratio was 3.63, in 2022, 6.05, in 2023 was 2.73 and in the year 2024 is 3.67. This is the main result concluded from the liquidity ratio.

The gearing ratio is calculated after that for the period 2024 to 2021. The gearing ratio involves the "Debt-to-Equity Ratio" and "Debt-to-Asset Ratio". The ratio for these four recent years is creatively presented in the above table (Chika *et al*. 2021). In 2021 the "Debt-to-Equity Ratio" was 0.70, in 2022 was 0.66, in 2023 was 0.86 and in 2024 is 0.52. The "Debt-to-Asset Ratio" ratio is also calculated in the above table. In 2021 the ratio was 0.41, in 2022 was 0.4, in 2023 was 0.46 and in the year of 2024 the ratio is 0.35 (Byrapu, 2023). This is the most essential information resulting from the Gearing ratio calculation.

The next and another important ratio that is calculated in this assignment is the Efficiency ratio. This ratio is calculated in this case for the year 2021 to 2024. The "Asset Turnover Ratio" and "Fixed Asset Turnover Ratio" are one of the most crucial "Efficiency Ratio" which are calculated in this case to determine the company's financial ability. According to the above calculation table, it concludes the "Asset Turnover Ratio" in 2021 was 0.58, in 2022 was 0.61, in 2023 was 0.65 and for the year 2024 is 0.93(Olulu-Briggs *et al*. 2022). After that the "Fixed Asset Turnover Ratio" is calculated in these cases, the "Fixed Asset Turnover Ratio" in 2021 the ratio was 5.84 in 2022 was 7.46 in 2023 was 5.57 and in 2024 the ratio is 11.58. These are the main information concluded from the above ratio calculation table. These calculations help to make essential decisions about the business's financial capability for the most recent years (2021 to 2024). Through these calculations, the management of the organization can able to recognize the business issues and they are also allowed to solve those issues (Mosteanu and Faccia, 2020). Through this ratio analysis, it will be very helpful to compare the ratios with the company's competitors. Overall, these are the most essential and crucial ratios concluded from the above table and it is very helpful to make decisions about the company's financial capability.

2. Evolution of the ratio calculation

The table that is provided above presents an analysis comprehensively regarding the ratios of finance of NVidia, covering liquidity, profitability, efficiency, and gearing. Major insights are provided through these ratios into the performance of finance, overall health of finance, and efficiency over the health of finance over the past four years from projected 2021 to 2024.

1. Profitability ratios

Net profit margin

In this section the net profit margin has calculated and important results have come out. NVidia's margin of net profit has exhibited major fluctuations over the years. The profit margin of net profit stands at an impressive 48.85%, which indicates that nearly half of the revenue of the company into net income is converted. The attribution can be made through this exceptional performance to factors named strong demand, efficient management of cost for products of NVidia, or successful launches of the product. However, the margin of net profit in 2023 to 16.19% has dipped, which indicates major challenges, or increased expenses during the year. (Lu, *et al,* 2020)

ROE or Return on Equity

The measurement is done through ROE regarding the company's profit in relation to the invested equity by shareholders. The ROE of NVidia mirrors the observed trends in the margins of net profit, which is peaking at 69.24 in 2024, and reaching low in 2023 at 19.76%. It is indicated through the high ROE that the company is utilizing efficiently its shareholder's investment for the profit generation.

ROI and Return on Investment

The evaluation is made through this ratio regarding the company's efficiency in terms of investment in profit generation (Banerjee, *et al,* 2020). The ROI of NVidia follows a pattern that is similar to the ratios of profitability, with a projected high in 2024 of 68.33%, and a low in 2023 of 17.83%. A higher ROI signifies that the investment of the company has yielded major returns.

2. Liquidity ratios

Current ratio

The measurement is done through the current ratio regarding the ability of the company to meet its obligations of short term with its current assets. The ratio current of NVidia ranges in 2023 from 3.51 to in 2022 by 6.65. It indicates a strong position of liquidity. Above 1.0 the ratio current is considered healthy, and the ratios of NVidia exceed majorly this threshold, indicating that the company has ample current asset to cover its current liabilities.

Quick ratio

The ratio quick is a measure that are conservative of liquidity, excluding inventory from current assets. The ratio quick of NVidia follows a trend that is similar to the ratio current, ranging in 2023 from 2.73 to in 2022 by 6.05 (Susanto and Rambano, 2022). These values indicate that sufficient liquid assets with the company are present to meet its obligations short-term, even on inventory without relying on.

3. Gearing ratios

Debt-to-equity ratio

The measurement is done through this ratio regarding the extent to which a company is financed by debt relative to its equity. The debt-to-equity ratio of NVidia fluctuates between 0.529341 in 2024, and 0.863355 in 2023. A lower ratio is preferred generally as it indicates lower risk of finance, and a stronger position of equity (Hertina, 2021). The ratios of NVidia indicate a moderate debt level relative to equity.

Debt-to-asset ratio

The ratio of debt-to-equity evaluates the company's assets percentage that are by debt is financed. The debt-to-asset ratio of NVidia ranges from 0.346123 in 2024, to 0.463333 in 2023 (Rachman *et al*. 2023). These ratios indicate that a major portion of the asset of the company by debt is financed, which might be a decision strategically, or reflects the nature that is capital intensive of the business of NVidia.

4. Efficiency ratio

Ratio of turnover of asset

The measurement is done through this ratio regarding the efficiency with which a company utilizes to generate revenue for its assets. The ratio of turnover of assets which is fixed of NVidia exhibits a major a major variation that is projected (Renaldo, 2021). It is indicated through the higher ratio the more efficient utilization of assets, and the ratios of NVidia indicates an effective relative use of its assets in revenue generation.

Ratio of fixed asset turnover

The ratio of turnover of fixed assets evaluates the company's efficiency in revenue generation in terms of fixed assets. The ratio of turnover of fixed assets of NVidia exhibits major variation, which ranged from 5.56 to 11.58 from 2023 to 2024 (Patin *et al*. 2023). It is implied that the higher the ratio the more efficient fixed assets utilization, including equipment, plant, and property.

On an overall basis, the ratio of finance of NVidia reveals a company with strong liquidity, profitability, and efficiency which has some fluctuations is albeit over the years. The ratios projected for 2024 indicate that performance which is exceptional with high ratios of profitability, robust

liquidity, and utilization of assets efficiently. The dip, however, in 2023 is observed across many ratios, which indicates increased expenses, or major challenges at that year (Zhang, *et al*, 2020).

It is needed to be noted, and it is important also that these ratios should be interpreted in the industry of the company, landscape that is competitive, and overall strategy of business context. In addition to that, these ratios comparison to the benchmark of industry, and peer companies can provide insights further into relative performance of NVidia. Furthermore, the consideration is needed to be made, and it is important also to consider the external factors major impacts. It includes conditions of the market, advancements in technology, and changes in regulation on the performance of finance, and ratios of this company. A analysis that is comprehensive must also incorporate qualitative factors (Siregar *et al*. 2021). It includes strategies of management, innovation of product, and advantage that is competitive to an understanding that is holistic regarding health of finance, and prospects of future on a larger scale.

3. Comparison of the ratios with their competitors

Apple Inc. and NVIDIA Corporation are two influential companies in the tech industry, particularly in the realm of high-performance computing and graphics processing units (GPUs). In November 2020, Apple made a significant move by launching its CPU and GPU with the M1 chip (Apple Inc., 2020), directly entering the GPU market, and establishing itself as a competitor to NVIDIA. The release of the M1 Ultra chip further solidified Apple's commitment to integrating machine learning into its powerful Mac computing systems (Apple Inc., 2022), intensifying the competition with NVIDIA in the GPU and machine learning segments.

To analyze the financial performance of Apple Inc. and NVIDIA Corporation, we consider several key financial ratios and metrics that highlight their profitability, operational efficiency, and market valuation:

Profitability ratio

After analyzing both companies' profitability ratios it can be concluded that NVIDIA Corporation's profitability ratio is not higher than Apple Inc. in 2023 the net profit margin ratio of NVIDIA Corporation was 16.19% but the “net profit margin ratio” in 2023 was 26.16%. This information justifies that in this particular period, Apple Inc. has a better position (Moffett, *et al*, 2021). There are different sources like Yahoo Finance, Bloomberg etc. through which company financial details will gathered.

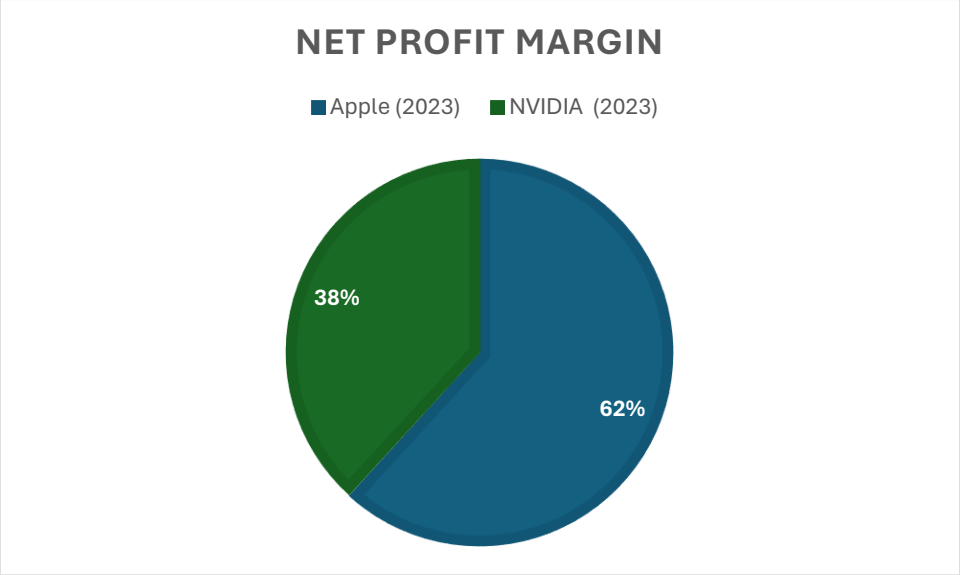

FIGURE 1 COMPARISON BETWEEN PROFIT MARGIN RATIOS

(Source: Self-created)

Liquidity ratio

The Liquidity ratio includes the current ratio and quick ratio, for the most recent year (2023) the NVIDIA corporation's current ratio is 3.51, and Apple's current ratio is 1.07. According to this information, it concludes the current ratio of Apple Inc. is comparatively lower than the NVIDIA corporation's current ratio. The quick ratio is another essential ratio that needs to be compared. According to the research, the quick ratio of apples in 2023 is 1.2 and the quick ratio of NVIDIA corporations in this particular period is 2.72. It can justify that the ratio of NVIDIA corporation is comparatively better than Apple Inc. in this period.

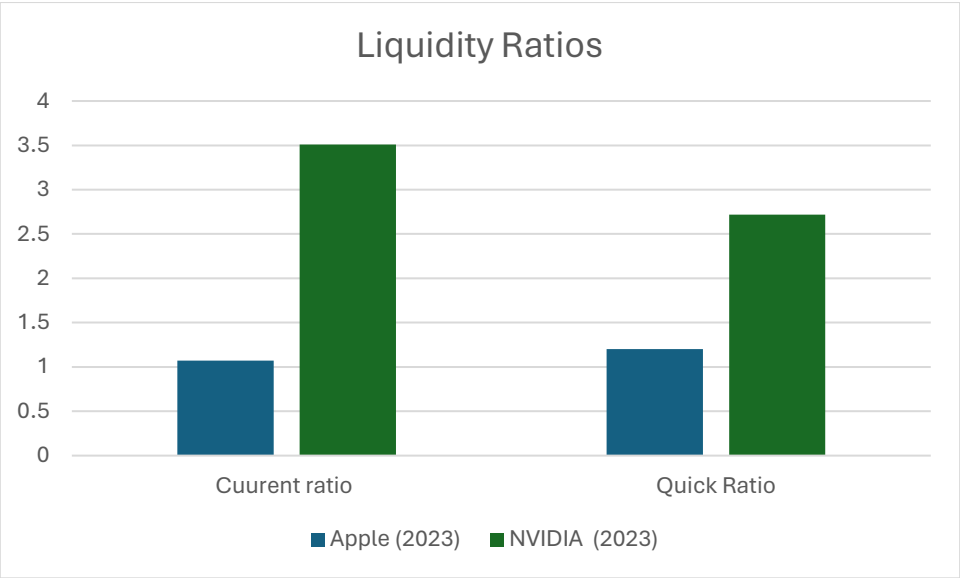

FIGURE 2 COMPARISON BETWEEN LIQUIDITY RATIOS.

(Source: Self-created)

Gearing ratio

"Debt to equity ratio" is one of the crucial gearing ratios, in 2023 the ratio of NVIDIA corporation was 0.86 and Apple's "Debt to equity ratio" was 1.46. This can be justified that Apple Inc. has a better "Debt to equity ratio" compared to the NVIDIA corporation.

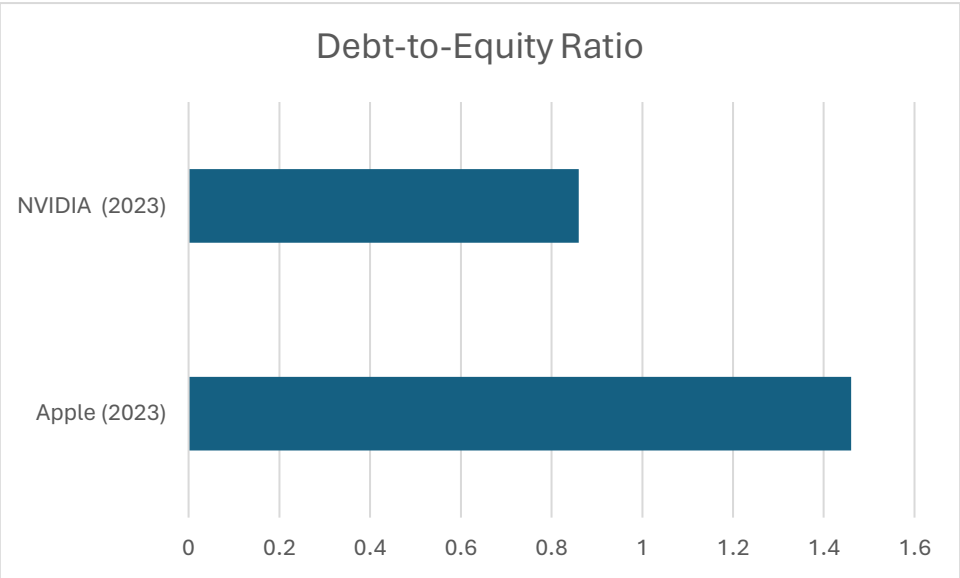

FIGURE 3 COMPARISON OF DEBT-TO-EQUITY RATIOS

(Source: Self-created)

Efficiency ratio

The “asset turnover ratio” is compared in this case to analyze the better ratio within both companies for the year 2023. The “asset turnover ratio” of Apple in 2023 is 1.09 and NVIDIA corporation's ratio is 0.65. It justified that the NVIDIA corporation's ratio is weaker than Apple's “asset turnover ratio” in this period.

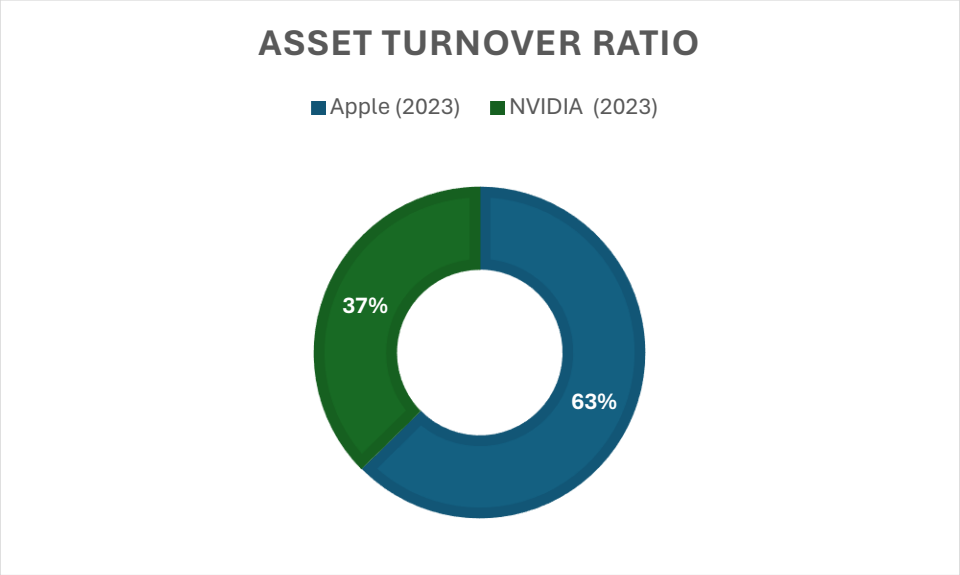

FIGURE 4 COMPARISON BETWEEN EFFICIENCY RATIOS

(Source: Self-created)

Both company's financial performance is good but in some positions, NVIDIA corporations need to improve its business process to regulate its business more efficiently and appropriately (Moffett, *et al*, 2021).

4. Recommendation

Based on the company’s performance analysis NVIDIA corporation needs to improve their business process in many aspects. Through these improvements, they can chase their success goals very easily and comfortably. Some essential recommendations for the company are discussed below.

1. Enhancing profitability:

The NVIDIA Corporation’s strong but after comparing with their competitors it can be concluded that in 2023 the company’s profitability ratio was comparatively not better than their competitor. So they need to consider this factor very closely. The need to adopt some important initiatives like optimizing the cost, and launching innovative products can solve issues related to their profit margin and it also helps to grow the net profit of the business. So this is one of the most crucial recommendations that need to be implemented in their business process.

2. Management of liquidity:

The liquidity position of the business is quite impressive but they need to improve their liquidity position to grow their business efficiency. Through implementing different strategies and planning they can able to regulate their business efficiently and manage their liquidity properly.

3. Revenue streams Diversification: At the time NVIDIA Corporation had an efficient presence in the gaming, AI and automotive sectors. It is essential to regulate diversified revenue streams to manage the business risks related to a particular sector. Virtual reality, edge computing and augmented realities help to give extra opportunities for revenue (Wang, *et al*, 2020).

4. Strategic partnership:

The company needs to develop important and efficient partnership strategies. This is one of the most essential recommendations to improve their business process and maintain all business factors appropriately.

5. Focus on Development and research:

Focusing on the developments and the researchers can help to regulate the operating business process more efficiently. This recommendation is also essential and should be needed to implement in their business to chase the success goals of the business. Through implementing this process they can solve their business issues which are involved with their business and they are also able to improve the company's profit margin.

6. Maintain the supply chain:

This is another essential recommendation to improve the company's business process and solve the business errors related with the supply chain. The need to focus on the flexibility of the supply chain, through this recommendation they can improve their business process and be allowed to chase the success goals.

Part C: Investment appraisals

1. Calculation of PBP, ARR and NPV

Year	Projected	Cash Flows (£m)

	A	B
0	-5000	-1000
1	2500	1500
2	2000	1000
3	1000	1000
4	-442	-470
	A	B
NPV (Net Present Value)	$0.57	$1,995.67
ARR (Accounting Rate of Return)	25.29%	75.75%
PBP (Payback Period)	3	1

TABLE 2 PBP, ARR, AND NPV CALCULATION

(Source: Self-created)

The above table reflects the calculation of NPV, ARR and PBP of projects A and B with a cost of capital of 0.75%. NPV, ARR and PBP are one of the most important and efficient investment appraisal techniques used for recognizing the most profitable investment. That means it helps to identify which project provides more returns on the investment. In this case, these techniques are used to determine which project is better and it also helps to acknowledge which project will provide higher profit from the investment. According to the above table, it can reflect that the NPV for Project A is $0.57 and the NPV for Project B is $1,995.67. After that, ARR was also calculated in this case to recognize the most valuable project (Ruscitasari and Mubiroh, 2021). So the ARR rate of Project A is 25.29% and Project B's ARR is 75.75%. After that, the PBP (Payback Period) is also calculated here to understand the project's capability to provide returns in the perspective of time. Project A's payback period is 3

and project B's payback period is 1. This is the most essential information concluded from the above investment appraisal technique or the calculation of project A and B's efficiency to make profits. These techniques are very essential in this case, after applying this technique it can be concluded that the NPV, ARR and PBP all result in Project B being higher than Project A. So, it can justify that Project B will provide a higher investment return than Project A. These results can justify that Project B will provide more profits from the investments than Project A. The investors should invest in Project B to get more returns on the investment.

2. Recalculation of NPV

Year	Projected	Cash Flows (£m)
	A	B
0	-5500	-1100
1	2250	1350
2	1800	900
3	900	900
4	-486	-517
NPV (Net Present Value)	$ (1,085.28)	$ 1,504.87

TABLE 3 RECALCULATION OF NPV

(Source: Self-created)

The above figure reflects the NPV calculation after re-adjusting the cash flow. In this case, the value of the initial investment increased by 10%. This means the previous initial investment was 5000 and it is increased by 10% which means the initial investment for project A is 5500 and the initial investment for project B in previous cash flow and 1000 and it will increase by 10% that means project

B’s initial investment is 1100. After that all cash flows are reduced by 10%, the all adjusted yearly cash flows are appropriately reflected in the above table. Depending on the values the NPV is recalculated, the recalculated NPV value for Project A is -1,085.28 and Project B is 1504.87 (Anđelković, 2020). This positive NPV value indicates that the investment in Project B is better than Project A. The investors are always focused on the NPV values and in this case, both NPV values justify that the investment in Project B is better than Project A. It will provide a higher return on the investment.

3. The advantages and shortcomings of the PBP, ARR, and NPV

Advantages

PBP

Among the key advantages of the payback period strategy is very simplicity. Depending on the anticipated cash flow, can determine how long an investment will take to pay for itself. Selecting the project that will yield a return on investment the quickest among three that have the same budget could be as easy as that. PBP could be an excellent strategy for managers who want assistance choosing their assets.

ARR

The Cause of ARR depends on accounting profit, it evaluates the investment profitability. The concept of net earnings, and depreciation, is taken into consideration in this method. This method alone considers the accounting concept of profit when calculating the rate of return. The accounting profit can also be easily determined from the financial records (McAleer, 2020). This is an important factor to consider while assessing an investment proposition.

NPV

The net present value method's clear benefit is the fact that it accounts for the basic principle that a dollar now is valued less than a dollar tomorrow. Each year's cash flows have been discounted through a subsequent capital cost period (Kusuma, *et al*, 2021). NPV is one of the most efficient and helpful methods that can analyze the return level of the investment. This is a very easy and time-consuming method this is one of the basic reasons for using the NPV method and it is also a basic advantage of NPV.

Disadvantages

PBP

One of the most essential disadvantages of the payback period is that it ignores the time value of money, this is very important for the concept of the business. Money earned earlier has better options than money earned later. Based on the time value of money summarized, because of the potential for a higher and more return if the money is invested.

ARR

This is one of the most essential problems associated with ARR. This method of ARR also completely ignores the concept of "time's worth of money" which is essential to the corporate world. The concept is that money which physically owned is valued in excess of the exact amount as time progresses. This is appropriate for an investor who may used their existing funds to create investments that yield interest or other revenue (Ljungqvist, *et al,* 2020). Under this essential method, it is nothing if the earnings are higher in the beginning stages or during the previous years. Just for the average return could have equally balanced both investments. These are the most important disadvantages of the ARR method.

NPV

The rate of return needed to justify an investment is known as the cost of capital. It aids in deciding if the risk is justified by the return on the investment. A business must determine an adequate cost of capital before deciding if to invest or not. It can be concluded that an investment is not risk-worthy and that a chance is lost if it sets its sights too high. On the other hand, it can be selecting unwise investments if the cost of capital is very cheap. Determining the cash flows from an investment might be challenging when there is no certainty of return (McMaster, *et al,* 2020). This may occasionally be the case for businesses that make judgments or invest in new machinery based on the needs of the business. An organization can determine essential decisions for the investment through implementing this NPV method.

4. Required non-financial factors need to consider

At the time of estimating the opportunities of the investment, it is very essential to focus on the non-financial factors besides the financial metrics such as NPV, PBP and ARR. These essential non-financial factors can notably affect success and investment sustainability. Some important non-financial factors are discussed below.

1. Demand and market trend: One of the most essential factors in a business is understanding the demand of the customers and assessing the trends of the market. A detailed analysis of emerging

technologies, the dynamics of the market and the strategy of the competitors helps to anticipate the forecasted demand and minimize the risk involved with the fluctuating market consideration (Helms, *et al*, 2022).

2. Legal and Regulatory compliance: The legal standards and the regulatory needs compliance are important for the success in terms of the long term. The laws and regulations brak can be concluded as legal liability and fines. So it is very important to evaluate the regulatory environment and justify the investment conducted through maintaining all laws and regulations.

3. Social and environmental impacts:

Implementing the social and environmental investment impact is essential for current social factors. Evaluating the essential factors like social inclusivity, ethical practices and environmental capability can help to enhance the long term viability and the reputation of the investment.

These are the main and most important non-financial factors that need to be considered to regulate a business appropriately and properly.

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