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How Does NVIDIA Dominate the Information Technology Market? Analytical Research Based on Company Evaluation

Haokai Guo

Nord Anglia Chinese International School, Shanghai, China
cadenhguo@hotmail.com

Abstract. The purpose of this study is to identify the current situation and overall value of Nvidia by analyzing it from two perspectives: the macro environment and the internal environment. Several assessment tools are used to facilitate this analysis, including the PEST model, which evaluates political, economic, social and technological factors; Porter's Five Forces Model, which measures the competitive strength of companies; and various financial ratios designed to represent Nvidia's financial health and stock price forecast. The paper begins with a brief introduction to Nvidia, presenting its main activities and business positioning. This guide follows with a detailed analysis of the aforementioned products and metrics to better understand Nvidia's strengths and weaknesses. The findings are finally integrated into a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis, which provides a better understanding of Nvidia's position in the market. This strategic plan helps shed light on Nvidia's work and future developments.

Keywords: Nvidia, GPU, Information technology, Data analysis, SWOT

1. Introduction

Since OpenAI released GPT (Generative Pre-trained Transformer) in 2018, AI (Artificial Intelligence) models have been brought to everyone. AI was defined as the leading technology for the future of human society [1]. Nvidia captured this opportunity well. NVIDIA's advanced GPU [2] technology corresponds with AI development, which attracted a great population of investors. However, NVIDIA's stock price has decreased in the past few months. From $129.51 to $108.00, what happened to NVIDIA? In the past, Nvidia focused mainly on gaming and rendering GPUs (Graphics Processing Unit), and they are still providing such products nowadays, such as the 40series. Nvidia is currently focusing on providing super chips to promote the development of AI. An ideal environment for AI development requires the following: super GPUs and efficient electricity supply. It is very costly to use advanced GPUs due to their high electricity consumption. Statistics have shown that Nvidia's new Blackwell chip [3] will be 30% less energy-consuming than the H100 chip [4], which will be very beneficial for AI development companies. This means that Nvidia is on the very front of the information technology industry. However, the problem that NVIDIA is facing is that they only rely on one supplier, which is TSMC [5]. This means that NVIDIA will be very inefficient on selling the new Blackwell chip. In order to make NVIDIA strong

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again, the first suggestion is to let NVIDIA focus more on Gaming GPUs to indicate that NVIDIA still has strong potential.

In January, a paper named “A study on Nvidia Corporation in the United States: Performance and Its Determinants” [6] was published by Yun Qian from University of Utara Malaysia. The author used information from Nvidia's annual reports from 2018 to 2022, and investigated the link between Nvidia Corporation's performance and its determinants by internal and external variables. Nvidia Corporation’s financial statistics conclude on several aspects: debt management, market risk, corporate governance, and operational risk. In the report, the most important factor influencing Nvidia Corporation's profitability is the average collection period. The conclusion section explains that both internal and external factors, such as the rate of inflation, interest rates, currency exchange rates, and unemployment rate, have an impact on Nvidia Corporation's performance as assessed by Return on Assets (ROA). Because of the high debt-to-income ratio, NVIDIA might be difficult to get loans. The business has effectively managed operational expenses and turned revenues into profits. The absence of contributions or charitable giving in 2021 has resulted in a decline in the corporate governance index. The precision of the result is diminished by some constraints in the investigation. The study may not be applicable to other semiconductor firms [7] due to its restriction to a single case study of Nvidia Corporation. One of the study's shortcomings is that it only used data from the last five years, which could not be entirely indicative of the performance of the firm over the long run. Furthermore, other elements that can have an impact on the success of the firm were not taken into consideration, and the study just examined the financial data of Nvidia Corporation. The small sample size, constrained methodology, and short data-collecting time are some of the study's shortcomings.

2. Company overview

NVIDIA, which is now among the top three biggest companies globally in terms of market cap and known as a leading U.S. chipmaker [8], has disclosed its revenue of $26 billion in the first quarter of fiscal year 2025. This represents an increase of about 262% when compared with the previous year. Its net profit, rising significantly to $14.81 billion, shows a growth of around 628%. Such expansion is much because of its advanced research and development along with innovation, particularly in AI and GPUs, which makes it different from other competitors. As the areas of cloud computing and big data see expansion, the company's data center [9] business is also benefiting due to its technological leadership. The company manages to serve both high-end and mid-range segments through its broad product offerings, reducing the necessity for much advertising while strengthening its dominance in the market through excellence in technology.

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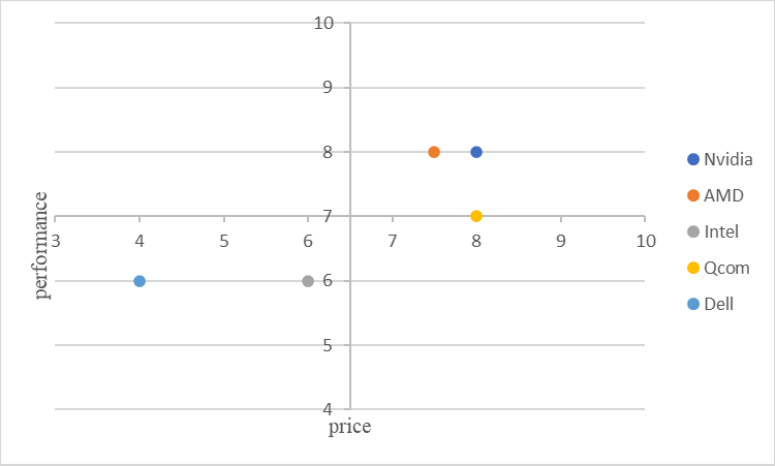


Figure 1. Perceptual map for NVIDIA and competitors

NVIDIA positions itself as a leader in the field of technology, focusing on high-performance computing, graphics, AI, and autonomous driving, with the goal of pushing innovation forward and using an ecosystem that helps various industries and applications grow. The company, with a broad layout of businesses and partnerships, tries to guide the future of computing technologies.

Although having a high ESG rating, NVIDIA still continues working to improve its sustainability efforts. The company's way of including sustainability in its model—mostly through innovations in environmental matters and social efforts—shows that it may be able to achieve long-term market leadership and success in the future.

3. Financial analysis

In the first quarter of fiscal year 2025, NVIDIA achieved revenue that broke records, amounting to $26.044 billion, showing an increase of 262% compared to the same period the previous year. This far surpassed earlier estimates and the revenue of $7.192 billion reported in the previous year. The company's net income was $14.881 billion, resulting in a net profit margin that is 57.1%, which is much higher compared to the 38% seen in the industry overall. Return on Equity (ROE) for NVIDIA stands at 120.06%, and Return on Assets (ROA) is at 73.2%, which are significantly above the industry averages, indicating that there may be potential undervaluation, even with a Price-to-Earnings (P/E) ratio over 47 times. With a strong current ratio calculated at 2.79 and predictions pointing towards a data center revenue of $88 billion for the year 2024, NVIDIA is showing a solid financial position, suggesting favorable conditions for further growth ahead.

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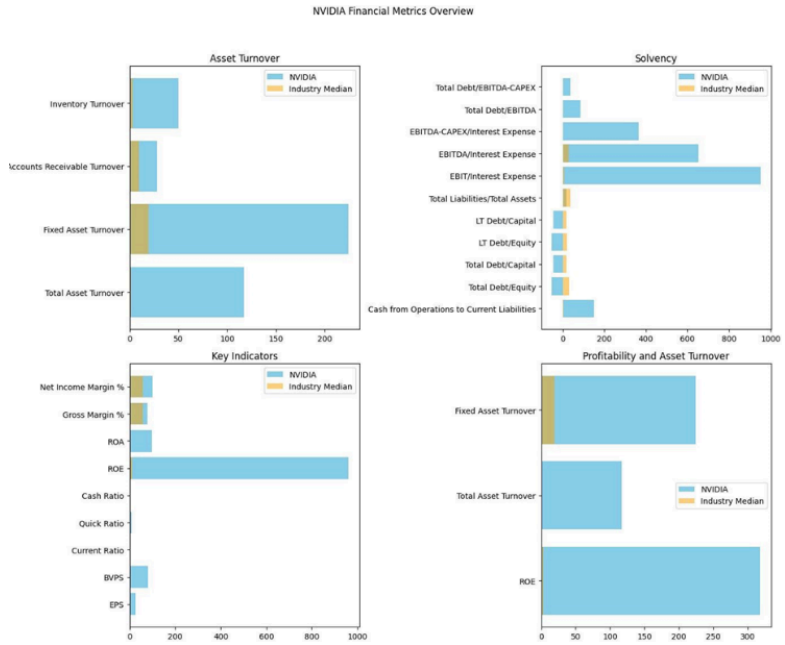


Figure 2. NVIDIA financial report [10]

4. Pest analysis

4.1. Political

Policies related to trade, tax, and intellectual property (IP) rights have major effects on the operations of NVIDIA; disputes in trade and regulations concerning cybersecurity play roles in influencing costs and how products are developed. The Department of Commerce in the United States made a decision where NVIDIA is now permitted again to export chips to China. This move could suggest that some changes might be happening in U.S. technology policies, which in turn might improve the opportunities for accessing markets.

4.2. Economical

Economic changes around the globe are having effects on how people are spending money, which also affects the costs for NVIDIA. Revenues are also influenced by how currencies are fluctuating internationally. The company's focus on innovation continues but relies on steady economic environments that are necessary for ensuring large research and development investments.

U.S. authorization of certain AI chip exports to China is backing NVIDIA's global standing in the competitive field.

4.3. Social

The rising need for computing systems with higher performance and artificial intelligence presents chances for NVIDIA’s growth. The market has increasing needs for people with more skills in areas like research and development as well as engineering, which leads to product development being influenced by these trends and cycles.

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4.4. Technology

Rapid changes in technology push forward the creation of new products, as seen in the example of NVIDIA bringing out Blackwell GPUs with more advanced features. Keeping up with these developments needs constant investment in innovation because of how the shifts towards cloud computing and edge computing continue to expand the areas where NVIDIA's products can be used.

5. Porter’s five forces analyze

5.1. Threat of new entrants (high)

New entries into the high-performance GPU market face limitations, and these barriers are due to the high costs and technical issues involved. However, with time, technologies progress, and competitors with significant R&D funds may enter the market, too. There are also considerations like regulations imposed by governments and protections related to intellectual property, which are part of why market entry could become difficult.

5.2. Rivalry among competitors (mid-high)

NVIDIA competes intensely, mainly with AMD, in the GPU market. There are also Intel and Google, which develop AI accelerators, which brings additional competition. However, NVIDIA stays ahead in the market because of constant technological developments and special offerings, for example, its CUDA platform and advanced capabilities in deep learning.

5.3. Threat of substitutes (high)

At present, no complete replacement exists for Nvidia's GPUs, as direct alternatives are not fully available. But, with the evolution of cloud computing services, there is a chance that some applications could move to cloud-based alternatives, which may lead to a possible shift in the need for stand-alone GPUs. In addition to this, CPUs may improve to a point where certain tasks that now need GPUs could be done by CPUs. However, this change, though plausible, is not expected in the very near term.

5.4. Bargaining power of suppliers (high)

Nvidia’s dependence on suppliers such as TSMC, which provides essential semiconductors and materials, means those suppliers have strong bargaining power. Although this power exists, Nvidia has built firm relationships with its suppliers and, as a key player in the industry, manages to lessen the risks tied to suppliers by using economies of scale to its advantage.

5.5. Bargaining power of buyers (mid)

Nvidia mainly aims at certain markets, including those of gamers, enterprises, and data centers, where attention is more on the performance and quality than on the prices of the products. Therefore, the ability of buyers to influence the terms of trade remains somewhat low, particularly in the higher-level market.

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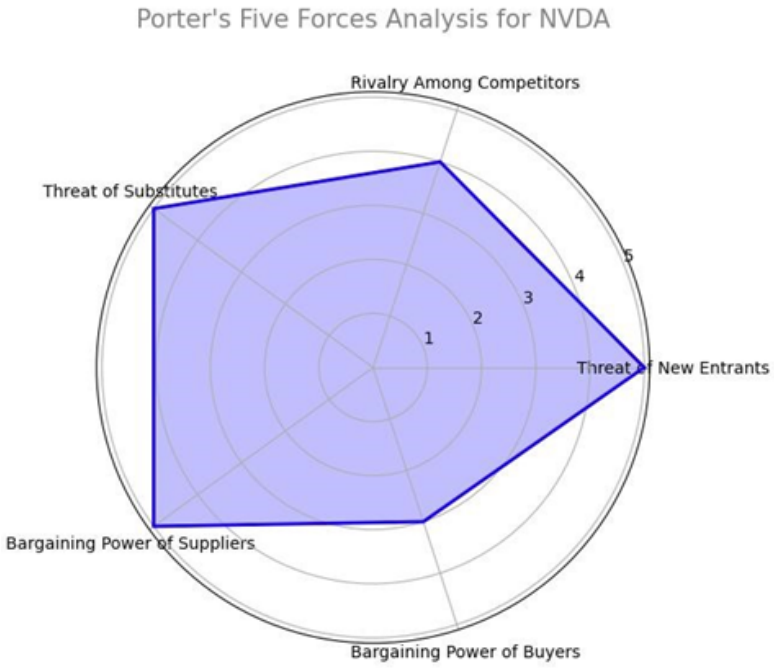


Figure 3. Porter's five forces model

6. Stock valuation

6.1. Multiple valuation

This way works by selecting stocks within the same sector and with similar size like the stock being estimated. Table 1 below displays EPS (earnings per share) and stock prices currently for NVDA along with three similar firms: AMD, QCOM, and Dell (DEL). In order to create a valuation reference point for NVDA, we figure out the mean price-to-earnings (P/E) ratio for the comparable companies.

Table 1. EPS and pricing of stock tickers

Stock tickers	NVDA	AMD	QCOM	DEL
EPS	6.12	0.68	7.51	5.03
Price	129.51	160.55	217.28	136.09

Using the information from the table, the calculation for the Average P/E ratio was done as follows:

$$Average P/E = \frac{(\frac{160.55}{0.68} + \frac{217.28}{7.51} + \frac{136.09}{5.03})}{3} = 97.36$$

Based on this calculated P/E ratio, the price for NVDA was then estimated accordingly:

$$\text{Price of NVDA} = \text{Average P/E} \times \text{EPS of NVDA} = 97.36 \times 6.12 = \$595.87$$

This calculation shows that under the usual market circumstances and when looking at similar companies, the stock of NVDA might have a value close to $595.87. When comparing this to NVDA's current price, which stands at $129.51, it seems to point towards a notable undervaluation.

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Thus, this could mean there is a potential opportunity for investment if the market adjusts NVDA's price to align more closely with the typical valuation seen among its industry peers.

6.2. Altman's Z-score

For determining the risk of bankruptcy over a two-year period, the Z-score developed by Altman was used. The Z-score is meant for analyzing financial health and predicting a company's chances of going bankrupt within two years. The Altman model presents a wide look at financial conditions, which is evaluated by factors like asset size, liquidity status, ability to generate profit, the way financials are structured, capability of covering debts, and how well assets are used.

The formula for the Altman Z-Score is as follows:

$$Z = 1.2 \times X1 + 1.4 \times X2 + 3.3 \times X3 + 0.6 \times X4 + 1.0 \times X5 = 70.56$$

X1 = Working Capital / Total Assets
X2 = Retained Earnings / Total Assets
X3 = Earnings Before Interest and Taxes (EBIT) / Total Assets
X4 = Market Value of Equity / Book Value of Total Liabilities
X5 = Sales / Total Assets

For NVIDIA, Z-Score that was measured is 70.56 [5]. This very high figure puts NVIDIA within the Safe Zone which clearly shows that its financial condition is stable and it means the risk for bankruptcy is mostly unlikely.

7. Company management

7.1. Flat process structure and integrated strategic management

NVIDIA makes use of flat structural design in an organization that mixes with a joined-up strategic management system. This kind of setup allows fast movement of information and speedy decision-making, bringing teams close together and helping in mutual efforts and coordination across teams.

7.2. Strong team innovation

NVIDIA's way of managing the organization is more focused on what the customers need, and this idea of team innovation is one part of it. Through focusing heavily on creative processes, it helps NVIDIA keep bringing new products that are somehow suited to what the market wants or what customers start to look for over time.

7.3. Robust business strategy

NVIDIA's plan for its business is built in different parts, such as making many different products, setting themselves apart in the market, being ahead in technology, and staying innovative. This strategy as a whole lets NVIDIA look at other markets, find new places to grow in, and stay in a good position against competition.

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7.4. Effective internal management and organizational structure

Teamwork is highlighted by NVIDIA, and much effort is placed on employee training, encouraging workers to push their limits and keep innovating continuously. Senior management mainly focuses on gathering market information and analyzing it, which helps the company to change business strategies quickly so it stays competitive in the market.

7.5. Corporate culture and values

NVIDIA's corporate culture and its values are key parts of its achievements. The company promotes a place where improvement never stops and performance stays high, making sure that every employee is focused and aligned with what the company wants to achieve in its broader goals.

8. SWOT analysis

8.1. Strengths

Technology leadership: NVIDIA boasts a strong R&D capability and a robust patent portfolio in the GPU space, particularly excelling in the gaming and professional visualization markets.

Strong brand presence: As a leader in high-performance computing solutions, NVIDIA enjoys a formidable global reputation.

Diversified product lines: Beyond GPUs, NVIDIA is involved in various cutting-edge technology fields, including artificial intelligence, deep learning, and autonomous vehicles.

8.2. Weaknesses

High positioning leads to high cost: Focusing on the high-end market may result in the loss of price-sensitive consumer groups.

Supply chain risks: Global supply chain issues can affect production and delivery, causing transport delays, damage to goods, and other related risks.

8.3. Opportunities

The rise of artificial Intelligence: The rapid development of AI presents NVIDIA with opportunities to expand the application range of its technology and products.

Market data center demand growth: Increased demand for cloud computing and big data processing creates a broad market for NVIDIA's GPUs.

Emerging market expansion: NVIDIA can explore new geographic and technological markets, such as autonomous driving technology.

8.4. Threats

Increased competition: NVIDIA faces stiff competition from AMD and other emerging technology companies.

Market changes: International trade regulations, tariffs, and related policies can impact NVIDIA's global business.

Rapid technological change: New products continue to emerge; NVIDIA must innovate continuously to keep pace with technological advancements, or risk being surpassed.

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9. Conclusion

NVIDIA, a leading technology company, controlled 84% of the independent GPU market as of Q4 2022, significantly outperforming its competitors. In fiscal year 2023, the company's revenue reached $27 billion with a net profit of $4.4 billion, showcasing a revenue CAGR of 24% and a net profit CAGR of 34% from 1999 to 2023. Recent innovations include the Blackwell chip series, NVIDIA Inference Microservice for developing AI assistants, and Jetson Thor for robotics applications. NVIDIA's diverse business covers data centers, gaming, and autonomous driving and has newly ventured into humanoid robots and vertically integrated services like cloud computing and software. Nvidia should reconsider their pricing of gaming GPUs to attract more customer to make purchases so that NVIDIA could get their status back in this market.

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