NVIDIA's Financial Strategy and Operation Strategy Analysis

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Abstract. NVIDIA is a global leader in visual computing that focuses on building products that enhance the human-computer interaction experience of personal and professional computing platforms. This paper mainly analyzes NVIDIA's financial strategy and operational strategy. What NVIDIA does will be especially important amid the coronavirus pandemic and the rapidly changing semiconductor industry. This paper applies SWOT, financial report analysis and other methods to specifically analyze NVIDIA's FCF, net profit and other data, and tries to explore NVIDIA's current financial strategy, operating strategy and basic operation situation at the present stage, to put forward suggestions and prospects for NVIDIA's financial strategy and operating strategy. It is known that NVIDIA, as the leader of the semiconductor industry, is still in a leading position in terms of volume. But NVIDIA's operation crisis has been revealed. It needs to better play its advantages in GPU and other aspects to continue to firm up and expand its leading position in the industry.

Keywords: NVIDIA; financial strategy; operational strategy.

1. Introduction

1.1 Background

NVIDIA is a semiconductor company that designs display chips and mobile processors and is a global leader in programmable graphics processing technology. With the rapid development of the mobile Internet field, the growth of the traditional PC market is slowing down, and the competition in the industry is becoming increasingly fierce. How NVIDIA responds to the current challenges and how it develops its future financial strategy and operational strategy and correctly implements them becomes extremely important.

1.2 Related research

The research results related to NVIDIA's financial strategy and operational strategy are as follows: Zhang conducted a financial analysis of Geely before and after the merger, using methods such as debt paying ability analysis, profitability analysis and operation ability analysis to track and analyze the financial indicators and data for more than ten years, proving that the merger had a promoting effect on the long-term development of both companies [1]. As one of the three basic reports of financial statements, the cash flow statement can accurately reflect the actual financial situation of the enterprise and reflect the impact of various items on the cash flow. According to the purposes of the cash flow statement, it is divided into three major activities: operation, investment and financing, which play a very key role in the financial work of the enterprise. However, how to take effective measures, give full play to the actual role of cash flow statement, constantly improve the level of financial management, and promote the healthy development of enterprises, is the current social enterprises worth thinking about the topic. Based on this, the paper mainly takes enterprise financial management as the background, carries out t Lu Shaorong around the cash flow statement, respectively expounds on the application of the cash flow statement in enterprise financial management, and the common problems [2]. Lu Danmeng takes Deppon Logistics Co, Ltd. as the research object to evaluate its core competitiveness from the financial perspective. On the basis of the related literature and theory of the evaluation of core competitiveness, the paper makes a distinction between core competitiveness and financial competitiveness. By summarizing and detailing the components and evaluation methods of core competitiveness, the paper selects a specific

operational core competitiveness index system from the perspective of basic resource cost, science and technology cost, human resource cost, profitability, debt-paying ability, operating ability and other dimensions combined with the characteristics of the logistics industry, and establishes an evaluation model of core competitiveness [3].

At present, many scholars use the SPACE matrix, PEST analysis, SWOT analysis, Porter's five Forces model analysis and external environment evaluation matrix to analyze each enterprise. Zhang Jiawen starts from the industry and current challenges of NVIDIA Company. First of all, it uses PEST analysis, Porter's five Forces model analysis and external environment evaluation matrix to conduct a relatively in-depth analysis of the external macro environment, industry conditions and market competition of NVIDIA Company, and summarizes the external opportunities and external threats of NVIDIA Company. Secondly, it analyzes the company's resources, capabilities, operating status and culture, and finds out the internal advantages and disadvantages of the company's operation through the internal environmental assessment matrix. Then the SPACE matrix is used to analyze whether the company is suitable to adopt an aggressive strategy at present, and the SWOT analysis method is used to formulate and select the company's development strategy. Finally, this paper discusses the implementation, control and feedback of NVIDIA's development strategy [4]. Tao Feng introduces the current situation of the chip industry after the COVID-19 pandemic. Two years ago, the chip industry's supply chain was disrupted by the pandemic. Chip prices have soared. The mismatch between supply and demand has changed dramatically. So NVIDIA isn't selling, Qualcomm is cutting orders, Samsung is clearing inventory, and even smaller chipmakers are disappearing. And with the risk of a global recession growing, the chip market could cool even more quickly [5].

1.3 Objection

Have a basic understanding of NVIDIA's financial strategy and operational strategy through macro analysis and financial report analysis, and put forward relevant prospects. First, through the basic analysis of the corporate background of NVIDIA to understand the general situation of the company, and then through the analysis of the financial report of NVIDIA to understand the financial status of NVIDIA, and then the SWOT analysis of NVIDIA macro analysis to draw conclusions and relevant suggestions.

2. Basic Descriptions of NVIDIA

2.1 Background

Founded in April 1993, NVIDIA is a semiconductor company that designs display chips and chipsets. NVIDIA also designs the cores of game consoles, such as the X-box and PlayStation 3. NVIDIA's best-known product lines are the Ge-force series for individuals and gamers, the Quadro series for professional workstations, and the Tesla series for servers and efficient computing. NVIDIA is headquartered in Santa Clara, California. The current president is Huang Jen-Hsun [6].

2.2 Development Current Situation

In 2021, NVIDIA and AMD partners' shipments in the graphics market grew to $51.8 billion, a 29.5% year-over-year growth rate, with more than 50 million individual graphics cards shipped and the average price of a graphics card reaching a staggering $1,000 +. NVIDIA occupies 77.2% of the market share, which is the absolute market leader.

Although NVIDIA reported a 33% year-over-year and 44% sequential decline in its primary gaming business in the second fiscal quarter of 2023 (ending July 31, 2022), its market share still increased from 75% in the previous quarter to 79%, which is basically unchanged from 80% in the same period last year. AMD's share of the stand-alone graphics market fell to 20% from 24% in the previous quarter. The big change this year is that Intel is also in the game, with 1% of shipments, still in the early stages [7].

2.3 Research Targets

2.3.1 Master the regularity of NVIDIA's production and operation

The development of production and the size of the business volume are correlated in some way with the production and operation activities of firms. Distinct sectors require different standards to be followed because of the differences in sales characteristics and the use of capital. The goal of financial analysis is to thoroughly understand the regularity of capital movement through the analysis of pertinent data. Even within the same industry, there are variations in terms of product types, operation size and management level, capital requirements, and the application of various traits and regulations. In order to support financial management and the production and operation of businesses, financial analysis aims to master and comprehend the shifting regulations governing capital mobility.

2.3.2 Understand the current situation and existing problems of NVIDIA's operation and management

The financial analysis index's numerical value reflects how consistently an organization produces goods and manages its operations. By contrasting the index values, we can identify management issues, identify gaps, and support enterprise business decisions.

2.3.3 To find out the strengths and weaknesses of NVIDIA, so as to know it and serve for NVIDIA to carry out the competition in the market and formulate a development strategy

The index values for an enterprise's solvency, earning potential, potential for development, and other factors reveal its strengths and weaknesses.

3. Balance sheet

On August 8, 2022, NVIDIA pre-disclosed an earnings report that was far below expectations in the U.S. stock market. NVIDIA's fiscal second-quarter revenue forecast was $6.7 billion, compared with the $8.1 billion guidance it gave in May. In just over two months, the guidance has been substantially falsified. This shows that the US and the global macroeconomic downturn is far more than corporate management expected. The cryptocurrency downturn has also taken a toll on NVIDIA's results. With tighter regulation of cryptocurrencies in China and the rapid cooling of the cryptocurrency market since the beginning of this year, the demand for graphics cards in this sector has also shrunk rapidly. In response, NVIDIA has taken action with game partners to adjust channel pricing and inventory, and it is likely that the product will be discounted.

3.1 Industry-based financial analysis

NVIDIA had a three-year revenue growth rate of 31.3 percent. That contrasts with a median of 7.9 percent for the semiconductor industry. In other words, NVIDIA's sales trends are better than nearly 90% of its competitors. Over that time frame, NVIDIA's free cash flow (FCF) and book growths were 36.7% and 40.2%, respectively. Both measures easily beat the semiconductor industry average. Fundamentally, NVIDIA's margins are surprisingly high. Its gross, operating and net profit margins were 60.45%, 31.5% and 26%, respectively. All of these figures are ahead of competitors. From its own point of view, the recent FCF of Inventec is lower than that of 2022, and it shows a downward trend for the first time in nearly 8 years. Considering the current environment of NVIDIA, it can be seen that although NVIDIA is still ahead of its peers, it is still affected by the environment and faces certain financial challenges [8].

Table 1. Some important numbers for NVIDIA FCF [8]

Current free Cash Flow (FCF)	Mid-range for the last 10 years	Semiconductor industry median
6.264 billion	2.203 billion	0.15 million

As shown in Table 1, NVIDIA’s Mid-range for the last 10 years is much higher than the Semiconductor industry median, and its FCF has been growing in the past 10 years. So, we can infer

that NVIDIA is in a relatively leading position in the semiconductor industry and in a state of development.

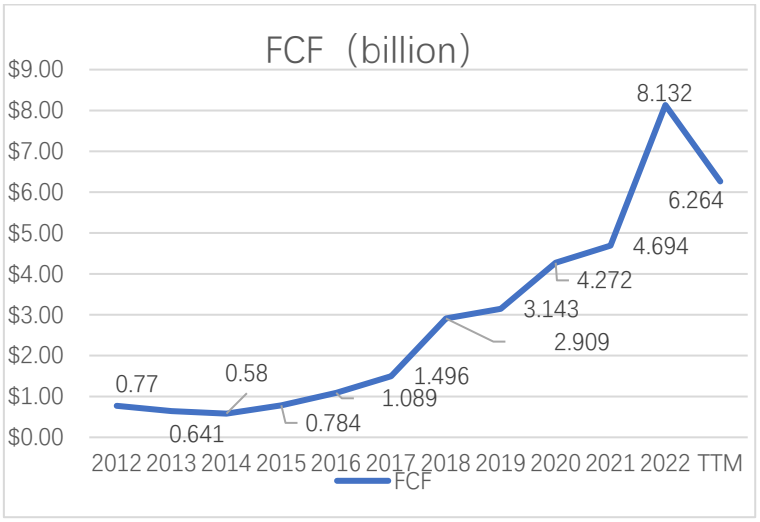

Fig. 1 NVIDIA's annual free cash flow (FCF) data (Data source: [9], Photo credit: Original)

Table 2. TTM chart of NVIDIA's free cash flow (billion) [9]

	2012	2013	2015	2016	2017	2018	2019	2020	2021	2022	TTM
FCF	0.77	0.641	0.784	1.089	1.496	2.909	3.143	4.272	4.694	8.132	6.264

As shown in Fig. 1 and Table 2, NVIDIA has been growing rapidly in the past few years but has recently slowed down. But the overall level has been maintained high [9].

3.2 Operating income

As shown in Fig. 2. Sustained growth During the pandemic, the demand for personal computers and servers soared, NVIDIA business development was good, the revenue and profit continued to rise in the past three years, the gross margin maintained at over 60%, good profit.

In the latest quarter, the market environment was not good, and the main business sales were pre-cooling.

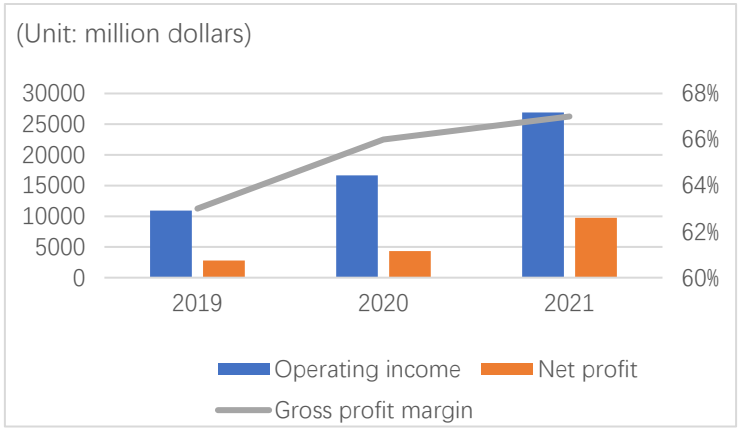

Fig. 2 NVIDIA's operating income, net profit, and gross profit margin between 2019 and 2021 (Photo credit: Original)

"We are transforming our supply chain in a challenging macro environment, and we will get through it," said founder and CEO Jen-Hsun Huang.

As shown in Figure 3, operating revenue began to decline in the second quarter of 2022, and net profit peaked in the fourth quarter of 2021 and then began to decline. Gross profit margin fell seriously in the second quarter of 2022, falling to the freezing point of nearly three years.

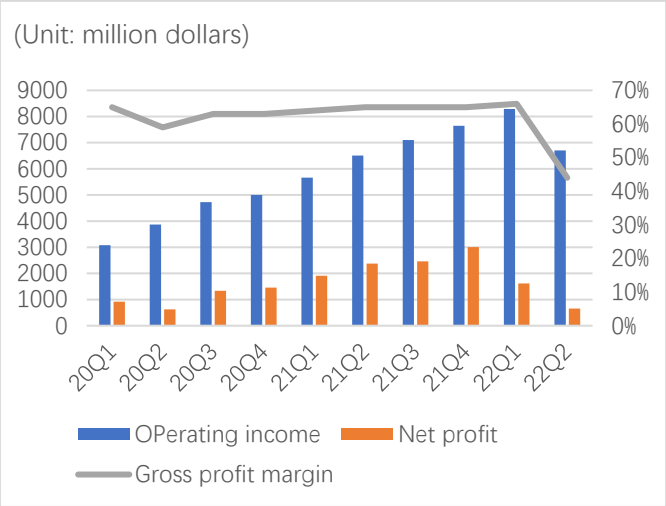

Fig. 3 NVIDIA's operating income, net profit, and gross profit margin between 20Q1 and 22Q2 (Photo credit: Original)

3.3 Enterprise operation overview analysis

Below is an excerpt from NVIDIA's management Discussion and analysis section. This is an excerpt from the company's 2021 10-K report.--analysis of the operation of different departments of NVIDIA Enterprise in recent years.

3.3.1 Operation of result

The growth of Mellano, which Nvidia acquired on April 27, 2020, as well as ongoing growth and sizable profit margins from NVIDIA's new products and Ampere GPU architecture systems are all reflected in the comparison between fiscal years 2020 and prior fiscal years.

3.3.2 Computing and Networking

Revenue rise of 109% for the Computing and Networking category in fiscal 2021

The FY2020 comparison takes into account Mellanox's (Mellanox was bought on April 27, 2020) expansion as well as the ongoing expansion of NVIDIA Ampere GPU architecture systems and new products.

3.3.3 Income from concentration

In FY2021 and FY2020, sales to customers outside of the US amounted to 81 and 92 percent of total revenue, respectively. Income distribution across nations, broken down by region. No client will account for 10% or more of total revenue in FY2021, regardless of the fact that the revenue may belong to end customers in several places, depending on where the product was initially charged. In FY2020, Dell contributed around 11% of our overall revenue, mostly because of the graphics business.

3.3.4 Gross profit and gross margin

Net fees deducted from total revenue results in gross profit. Revenue costs are primarily comprised of the following: manufacturing, assembly, testing, and packaging costs for semiconductor wafers; plate and equipment costs from subcontractors; production support costs (including direct and indirect costs associated with such purchases); settlement of final test return claims; stock spares and warranties; memory and component costs; and delivery costs. Revenue costs also include expenses for acquisitions, the creation of licensing and servicing contracts, charges relating to intellectual property, and capital reimbursement for employees working in the production sector.

Marketing Our overall gross margin in FY2021 was 62.3%, while in FY2020, it was 62.0%. The portfolio of greater data centers and lower automotive sales drove growth in FY2021, which was somewhat offset by costs associated with the acquisition of Mellanox, including $161 million in non-recurring inventory increase fees and $263 million in ongoing intangible asset depreciation.

Stocks totaled $116 million in FY2021 and $161 million in FY2020, respectively. Inventory sales that had previously been written down totaled $145 million in both FY2021 and FY2020. As a result, there won't be much of an overall net impact on our gross margin in FY2021 and FY2020.

Following is a breakdown of the gross margin outcomes for each reportable segment:

In FY2021 compared to FY2020, our graphics segment's gross margin grew, principally due to a product mix, lower sales than those of conventional vehicle infotainment systems, and higher margins than those of the Quadro/NVIDIA RTX.

The inclusion of Mellanox products, greater margins for data center computing systems, and a smaller product range for some automotive solutions were the main reasons for the improvement in gross margin in our compute and networking business in FY 2021 compared to FY2020.

4. Marketing

4.1 Enterprise valuation method: NVIDIA's EV-to-EBITDA

Enterprise value multiple is an important valuation index to measure the financial and investment value of enterprises. This measure is usually combined with or substituted for the price-to-earnings ratio (TTM) to determine the fair market value of a company.

Table 3. NVIDIA's EV-to-EBITDA over the past decade [10]

Minimum value	Median value	Maximum value	The current value
4.33	28.03	83.58	35.46

Among the 486 companies in the semiconductor industry, NVIDIA's EV-to-EBITDA ranks below 77.78% of companies in the industry.

Table 4. NVIDIA's EV-to-EBITDA annual data [10]

Date	2014-01	2015-01	2016-01	2017-01	2018-01	2019-01	2020-01	2021-01
EV-to-EBITDA	7.40	7.09	12.39	27.85	41.62	19.37	40.13	55.91

Table 5. NVIDIA's EV-to-EBITDA quarterly data [10]

Date	2020-04	2020-07	2020-10	2021-01	2021-04	2021-07	2021-10	2022-01
EV-to-EBITDA	42.50	59.07	61.39	55.91	53.06	55.61	63.69	3.22

As shown in Table 3, Table 4, and Table 5, NVIDIA's EV-to-EBITDA had been on an upward trend from 2014 to 2018, but it suddenly fell back in 2019, indicating that it was undervalued in 2019. Between 2020 and 2022, NVIDIA's EV-to-EBITDA stayed around 50, moving up and down.

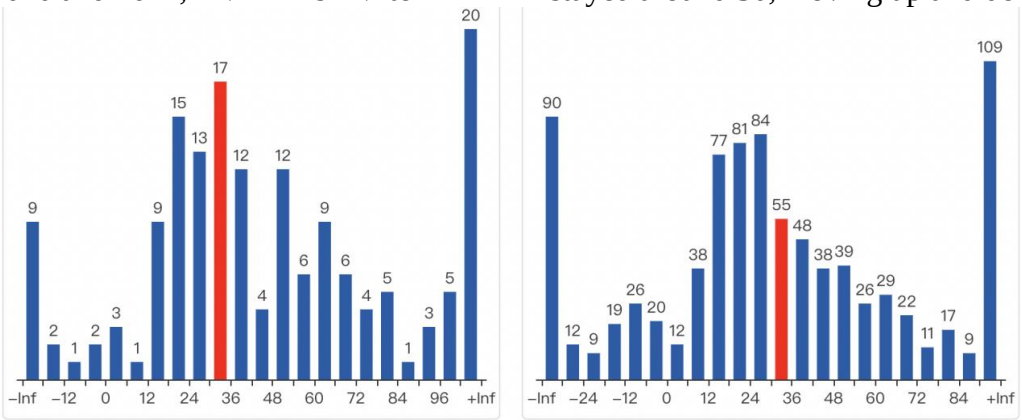

Fig. 4 Secondary Industry Distribution (Semiconductor) and Primary Industry Distribution (Technology) [10]

As shown in Figure4, in semiconductors (Tier 2) and technology (Tier 1), NVIDIA's EV-to-EBITDA ranges are as follows: the x-axis represents the EV-to-EBITDA value, the y-axis represents

the number of companies falling into the EV-to-EBITDA range; The red bar represents the range of EV-to-EBITDA for NVIDIA [10]. As shown in Fig. 4, NVIDIA's EV-to-EBITDA is in the middle and lower reaches of the industry, suggesting it is undervalued.

4.2 SWOT

4.2.1 Strengths

Network of Partners

In order to give its clients better service, NVIDIA has partnered with a number of businesses. Through a network of beneficial partners, it has consistently offered solutions.

Artificial Intelligence (Al) consultants have been hired by The Partner Network as part of its Professional Services Service Delivery Partners (SDP-PS) initiative. Customers can realize the business transformation that AI offers thanks to these partners' experience in machine learning, deep learning, and artificial intelligence. HCL, Teradata, Insta Deep, Quest, DXC Technology, and Razor Labs are some of its main service provider partners. Solution suppliers, cloud service providers, and professional services partners for the business include Amtrak Technologies Pvt LTD, Binary Systems Pvt LTD, Fore Solutions Pvt LTD, Futurenet Technologies (India) Pvt LTD, Mistral Solutions Pvt LTD, and Vintech Electronic Systems Pvt LTD. And Tata Consultancy Services LTD. Strategic partnerships strengthen its product portfolio and provide a competitive advantage over its peers.

Attaches great importance to the research and development

NVIDIA attaches great importance to research and development activities and scientific innovation. The company's significant investment in research and development activities has helped to enhance its technical leadership in visual computing and enhance its product offerings to meet the various needs of its customers. It also helps the company strengthen its customer base and market position.

The company's innovation strategy is focused on extending its platform and technology leadership in artificial intelligence and visual computing. NVIDIA uses its research and development resources to enhance the user experience for consumer entertainment and professional visualization applications. Over the past few years, the company has been investing in research and development activities. As of January 2021, the company employed 13,532 people in research and development. In fiscal 2021, the company will spend $3.924 billion on R&D activities, or 23.5 percent of its total revenue. The Company's patents and pending patent applications are primarily related to its products and product-related technologies.

4.2.2 Weaknesses—Liquidity position

NVIDlA may be at a disadvantage in funding any possible market possibilities due to low liquidity. The company's current ratio at the end of fiscal 2021 is 4.1 as opposed to 7.7 in fiscal 2020. This resulted from its current liabilities rising by 83.3% from $1.784 billion in FY2021 to $395 million in FY2020.

4.2.3 Opportunities

Data center market growth

The growing global markets for game consoles and data centers will be profitable for the firm. Based on internal research, it is predicted that the global market for data centers and consoles will reach $108.6 million by 2025. The biggest anticipated contribution would come from application hosting and data center services, with a market share of 62.2%, followed by hosting services (37.8%). Asia-Pacific is expected to outperform North America (26.9%), Western Europe (23.6%), the Middle East and Africa (12.7%), Central and Eastern Europe (4.3%), and Central and South America (both with estimated market shares of 29%). (3.5%). NVIDIA develops and designs computing solutions that improve the power efficiency of high-performance data centers based on artificial intelligence and high-performance computing applications.

According to the growth of the world's automotive manufacturing sector, the company might profit from the expanding car manufacturing industry as a provider of graphics and digital media processors to the automotive market. In recent years, the global automobile manufacturing industry as a whole has achieved a relatively stable and sustained level of growth.

The global auto manufacturing industry is expected to be worth $79.5 billion by 2024. In terms of volume, the global automotive manufacturing market is expected to reach 24.4 million vehicles by 2024. In terms of category, motorcycle manufacturing is the largest segment of Indian auto manufacturing, accounting for 81.8% of the total industry.

Geographically, India accounts for 8.3 percent of the Asia-Pacific region's automotive manufacturing output.

4.2.4 Threats

Strict supervision

Federal, state, municipal, and international laws, regulations, and regulations apply to NVIDIA's policies, practices, and technology. The responsible authorities may decide to make adjustments to these rules and regulations from time to time in response to policy changes. The company's day-to-day business operations are adversely affected by compliance with applicable laws and regulations.

Enforcing relevant laws and regulations may result in high financial burdens, including litigation and settlement expenses, civil and criminal liabilities, increased compliance costs, business disruptions, and customer churn, which may harm a company's reputation. Additionally, any modification to federal, state, or foreign tax rules could have an impact on the company's tax assets or liabilities as well as the way its operations are conducted.

Network Security Risks

Evolving cyber risks can compromise a company's systems and business applications' security, and hamper its capacity to serve consumers.

In order to get access to an organization's networks and data centers, hackers and groups, including state-sponsored groups, continuously develop and distribute malware or take advantage of flaws in hardware, software, and other infrastructure. Due to NVIDIA's reliance on technological infrastructure and systems, there is an increased possibility that natural disaster-related system breakdowns will occur.

Unanticipated circumstances, including malfunctions and breakdowns, unauthorized access, power outages, human error, and others.

Confidential information leakage and technological or associated system breakdowns could have an impact on the business and expose the company to unforeseen liabilities.

5. Suggestion

5.1 Gaming business

While the magnitude of the dealer cutbacks in the second quarter is coming to light, given NVIDIA's current inventory levels, it's expected to remain weak for several more quarters. NVIDIA needs to watch out for the next burst of new products and wait for the price of the virtual currency to recover.

5.2 Gross profit margin

NVIDIA's gross margins fell off a cliff in the second quarter as dealers cut orders and its products sold slowly and marked down prices. The company should pay attention to the sales of new products in the future and the digestion of dealer inventory to improve the gross profit margin.

5.3 Continue to leverage its GPU advantages

Both games and data center services are inseparable from GPU support, and its core competitiveness is still the two words of computing power. It will certainly be hard for NVIDIA to

expand its gaming business amid declining demand. But it is of great significance to preserve the present.

6. Conclusion

This paper analyzes the financial strategy and operation strategy of NVIDIA by collecting and sorting out the internal and external environmental data of NVIDIA, combining it with the theoretical system learned during the scientific research and applying relevant quantitative analysis and qualitative deduction and induction methods.

Here are some of the main conclusions of this paper:

1) Generally speaking, with the development and progress of science and technology, especially in the era of network information, the external environment is generally favorable for semiconductor chip enterprises. The overall demand of the industry continues to grow, but the market competition is fierce, and the demand changes rapidly. Therefore, market research, prediction, product positioning and the improvement of the core competitiveness of enterprises are particularly important.

2) The company adopts an aggressive strategy of giving full play to its advantages and making use of opportunities. Due to the company's obvious financial advantages, obvious product competitiveness and strong research and development ability, coupled with good opportunities in the external environment, the company finally adopted the growth strategy of product diversification.

3) It is suggested that the company adopt a diversified product strategy. The company has strong research and development capability and financial capability. Under the opportunity of the rapid development of the mobile Internet field, the company should increase its investment in research and development and marketing of mobile products. Commandeering technology peaks.

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