

Study on Financial Competitiveness of Listed Companies in New Energy Vehicle Industry

— BYD as an Example

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Abstract: As the environmental problems are becoming more and more severe, people attach more importance to environmental protection, boosting the heat of new energy cars. BYD takes the trend and becomes one of the leading companies in the new energy vehicle industry. This passage will take a deep look into BYD's financial data and develop a ratio analysis of the company. First, it will use the data from its financial reports from five years (2017-2021) to calculate its ratios in the four aspects: solvency, profitability, operating capacity, and growth capabilities. Compared according to the timeline, the company's changes are clearer. The trend of increasing or decreasing is shown directly. Then it will use the data in 2021 to compare to the average of the industry, locating the company itself in the industry. By doing the comparison, as BYD is expected to perform better than the average as it is one of the leading companies, whether BYD needs improvement is demonstrated. This research can offer a view of BYD in the new energy vehicle industry, with an analysis of how it behaves and how to improve.

Keywords: financial analysis, BYD company limited, new energy vehicle industry, ratio analysis

1. Introduction

The new energy vehicle industry has been rapidly growing in recent years, driven by the increasing demand for environmentally friendly transportation options. As a result, many companies have emerged in this sector, striving to gain a competitive edge in the market. BYD has emerged as a prominent player, with a reputation for innovation and sustainability among these companies.

This essay aims to conduct a comprehensive study of the financial competitiveness of listed companies in the new energy vehicle industry, using BYD as a case study. The study will examine various aspects of BYD's financial performance, including its solvency, profitability, operating capacity, and growth capabilities. Additionally, the study will analyze BYD's financial position in comparison to other companies in the industry, identifying key factors that contribute to its competitive advantage.

Overall, this essay provides valuable insights into the financial competitiveness of listed companies in the new energy vehicle industry, with a focus on BYD as a leading example. Through a thorough analysis of BYD's financial performance, the essay aims to focus on the key factors contribute to success in this industry and provide practical recommendations for companies seeking to enhance their financial competitiveness.

2. Related Literature Review

2.1. Definition of the Concept of "Financial Competitiveness"

According to international economists and financial experts Korinek and Serven, "financial competitiveness" refers to the ability and level of a country or region's financial institutions and markets relative to other competitors in the global arena, including the design, issuance, and sales of various financial products, the quality of financial institution services, financial regulatory systems, and the depth, breadth, and efficiency of financial markets [1].

For example, the World Economic Forum defines financial competitiveness as "the ability of a country's financial system to offer effective, efficient, transparent, innovative, and diverse financial products and services, as well as strong regulation and financial infrastructure"[2]. Financial competitiveness can be achieved by improving the efficiency and innovation capabilities of financial institutions and markets to attract more capital and talent, promote economic development and enhance international competitiveness. As a result, the ratio analysis can help deciders to evaluate the companies as it offers views of the financial performances.

2.2. Literature Reviews

The study on the financial competitiveness of listed companies in the new energy vehicle industry is a relevant and timely topic due to the increasing focus on sustainability and the growing demand for electric vehicles. To provide a comprehensive analysis of this topic, the literature review will cover key areas related to financial competitiveness, including the new energy vehicle industry, financial performance analysis, etc.

2.2.1. Oversea Research

The article "Financial performance evaluation of new energy vehicle companies in Europe" by Dusak and Aktas has mainly focused on the financial performance of new energy vehicle (NEV) companies in Europe [3]. The authors conduct a comparative analysis of financial ratios for 12 NEV companies based on their annual reports for the period of 2015-2019. The study employs a range of financial ratios to evaluate the financial performance of NEV companies in Europe. They find that the financial performance of NEV companies in Europe is affected by various factors, such as government subsidies, product quality, and brand reputation. Providing ratio analysis of car manufacturing in Europe, it has a referencing meaning for car manufacturing of BYD, which locates in China.

The article "The financial performance of electric vehicles: A comparison between Tesla and conventional automakers" by Ferraro and Santarelli have mainly focused on comparing the financial performance of Tesla, a leading electric vehicle (EV) manufacturer, with that of conventional automakers [4]. The authors examine various financial indicators, for Tesla and four conventional automakers (Ford, General Motors, Toyota, and Volkswagen) over the period of 2014-2019. The study finds that Tesla's financial performance is different from that of conventional automakers, with higher revenue growth but lower profitability margins. The authors attribute Tesla's high revenue growth to its focus on innovation and technological advancement, while its lower profitability margins are due to the high costs associated with developing and producing EVs. This essay offers a

way of comparing the company itself with other traditional companies in the same industries, which is helpful for the analysis of BYD.

2.2.2. Domestic Research

Several studies have examined the performance and competitiveness of companies in this industry. For instance, Zhang and Liu have analyzed the financial performance and competitiveness of Chinese new energy vehicle manufacturers using data envelopment analysis (DEA) and found that the industry's competitiveness has been improving in recent years [5]. This provides an insight into the whole industry of new energy vehicle manufacturing.

In terms of financial performance analysis, various methods can be used to assess a company's financial health and competitiveness. These methods include ratio analysis, trend analysis, and benchmarking against industry peers. For example, He and Wang have used ratio analysis to evaluate the financial performance of Chinese new energy vehicle manufacturers and found that companies with better profitability and liquidity tended to be more competitive [6].

However, three of the articles mentioned above cover the whole NEV manufacturing industry and one of them researches the industry in Europe, which is far away from China. This may lead to market differences. The research focuses on Tesla, which is also a NEV company and uses financial indicators to evaluate Tesla. There certainly are some similarities between BYD and Tesla, but differences are also significant such as location and service coverage. So as for this essay, the focus will be evaluating BYD by using ratio analysis.

3. Brief Introduction to BYD

3.1. Backgrounds of BYD Company Limited

BYD Company Limited, or simply "BYD," is a company with its main offices in Shenzhen, Guangdong Province. It was established in February 1995. In 2019, the corporation employed approximately 220,000 people, and its operations covered the automotive, rail transportation, new energy, and electronics industries. BYD is dedicated to advancing technological innovation and assisting in the pursuit of "carbon peaking and carbon neutrality" to advance the sustainable development of human society. Adhering to the brand mission of "meeting people's aspirations for a better life through technological innovation", BYD has won a series of accolades such as Fortune Magazine's "51 Companies Changing the World", the "Zayed Future Energy Award" and the "United Nations Special Energy Award" through its strong market presence and strategic moves to promote global sustainable development [7].

As China pushes the usage of electric automobiles, BYD embraces the opportunity and continues to grow. It achieves a 22.59% gain in sales and a 162.27% increase in shareholders' equity in 2021. The supply of its battery sector has increased by 205% in 2022, surpassing LG Energy in Korea to become the second-largest provider of batteries worldwide. Additionally, car sales increased by 136.5%, continuing to lead the market for new energy vehicles [8].

BYD is one of the leading companies in the car-producing industry, so it is worthy to take it as a representative of the whole industry. As it is rewarded as the first Chinese auto brand in the 2022 Global Brand Value 500, it leads the development of the Chinese car-making industry [9]. With a total operating revenue of 261.1 billion and a gross profit of 28.14 billion, it is one of the fastest-growing car manufacturing companies in China [10]. It gains an advantage in operating capacity but is below the average of the industry in some other respects such as debt ratio, ROA, etc. This may be due to the reason that it is a new company in this area respectively speaking.

3.2. Industry Characterization

BYD's main service is new energy car making. The new energy industry is an industry that uses renewable energy sources, such as solar, wind, hydro, and geothermal energy, for energy production, conversion, and utilization. The main characteristic of the industry is shown below.

3.2.1. Innovation

The innovation of the new energy vehicle industry is reflected in many aspects such as technology research and development, material application, control system, and charging technology. While traditional vehicles rely on fuel engines to drive them, new energy vehicles rely on new power systems to drive them. These power systems require continuous development and optimization to improve energy efficiency and performance while ensuring safety and reliability. New energy vehicles also require the use of new materials, such as lightweight materials, high-strength materials, and conductive materials, to improve the performance and energy efficiency of the vehicles. What's more, they need intelligent technical support, including Telematics, autonomous driving, etc., to improve the intelligence level of the vehicle, while improving its safety and comfort of the vehicle.

3.2.2. Technology-intensive

The new energy vehicle industry is a technology-intensive industry that requires highly specialized technical support, including power systems, batteries, motors, control systems, charging technology and intelligent technology, and many other aspects. Only through continuous technological development and innovation can BYD continuously improve the performance, safety, comfort, and intelligence of new energy vehicles.

3.2.3. Increased Competition

The increased competition in the new energy vehicle industry is characterized by accelerated technological innovation, policy support, and promotion, low entry barriers to the industry, increased market size, and diversified consumer demand. All of these factors are driving the rapid development of the industry, while also intensifying market competition.

4. BYD Financial Competitiveness Analysis

4.1. Solvency Analysis

The term "solvency" describes a company's capacity to meet its obligations and long-term financial viability.

4.1.1. Horizontal Analysis

The solvency analysis includes the current ratio, quick ratio, cash ratio, and debt ratio (seen in Table 1).

Table 1: BYD’s solvency analysis in five years.

| Year Ratio | 2017 | 2018 | 2019 | 2020 | 2021 |
|----------------|-------|-------|-------|-------|-------|
| Current Ratio | 0.98 | 0.99 | 0.99 | 1.05 | 0.97 |
| Quick Ratio | 0.79 | 0.76 | 0.75 | 0.75 | 0.72 |
| Cash Ratio | 0.06 | 0.11 | 0.14 | 0.45 | 0.38 |
| Debt Ratio (%) | 66.33 | 68.81 | 68.00 | 67.94 | 64.76 |

Firstly, its current ratio fluctuates around 1.00 in five years times but mostly is below 1.00, which means that its current assets are less than its current liabilities. As a result, the enterprise is at risk of late repayment of current liabilities. The quick ratio has decreased over these five years, which indicates that the company's current assets, such as accounts receivable or short-term investments, decrease. This may be due to a decline in the company's sales revenue or investment projects that fail to meet expected returns, which may cause by the pandemic. However, the cash ratio has risen, which is in a contradictory trend to the quick ratio. As a result, the company should concern about its accounts receivables and inventories to make sure that there will be a financial risk. The debt ratio of BYD fluctuates mostly above 65%, which is quite high, showing that creditors’ financing and leverage need to be improved. Nevertheless, as BYD is a company in new energy vehicles, it requires a great number of investments in innovation and new products, leading to a high percentage of debt ratio (He & Wang, 2023) [6].

4.1.2. Vertical Analysis in 2021

The chart below (Table 2) shows the comparison between BYD and the average of the industry (70% threshold range). The data on the average of the industry comes from the Economic Department of the All-China Federation of Industry and Commerce (also used below).

Table 2: BYD’s solvency analysis compared to the average of the industry in 2021.

| Comparator Ratio | BYD | The Average of the Industry |
|------------------|-------|-----------------------------|
| Current Ratio | 0.97 | 1.53 |
| Quick Ratio | 0.72 | 1.14 |
| Cash Ratio | 0.38 | 0.02 |
| Debt Ratio (%) | 64.76 | 49.57 |

*The data of the average of the industry comes from <http://www.acfic.org.cn/>

The remaining three data are all worse than the average except for cash ratio. As analyzed in the previous part, BYD may have high accounts receivables and inventories, resulting in a lower current ratio and quick ratio. As for the debt ratio, the reasons may be due to its company type. BYD is a car making company which requires a great number of investments. The investments are put into car manufacturing, batteries, plants, leading to a higher debt ratio.

4.2. Profitability Analysis

The profitability analysis can reflect whether a company use its asset wisely and efficiently.

4.2.1. Horizontal Analysis

The profitability of BYD has decreased in all five aspects (seen in Table 3). However, it has been illustrated that in 2020, all the data experience a rise but followed by a reduction in 2021.

Table 3: BYD’s profitability analysis in five years’ time (in percentage).

| Year Ratio | 2017 | 2018 | 2019 | 2020 | 2021 |
|----------------------------|-------|-------|-------|-------|-------|
| Return on Net Asset | 7.76 | 4.96 | 2.62 | 7.43 | 3.73 |
| Return on Total Asset | 3.04 | 1.91 | 1.09 | 3.03 | 1.60 |
| Return on Invested Capital | 5.73 | 4.66 | 3.59 | 6.44 | 3.81 |
| Gross Margin Ratio | 19.01 | 16.40 | 16.29 | 19.38 | 13.02 |
| Net Margin Ratio | 4.64 | 2.73 | 1.66 | 3.84 | 1.84 |

In an overall view, the pandemic is one of the factors that affect the whole industry, which BYD is also involved. Also, although BYD is a leader in the electric vehicle segment, since 2018, many global automakers have begun to invest heavily in the electric vehicle segment, which has increased market competition and put pressure on BYD's sales and earnings. This also led to market saturation, which decreases the market needs for BYD.

4.2.2. Vertical Analysis in 2021

Return on asset and margin ratio are worse than the average of the industry (seen in Table 4). The rate of return on asset evaluates the company’s overall profitability of assets. The difference between BYD and the average of the industry is not significant. Nevertheless, the gross margin ratio and net margin ratio are far behind the industry.

Table 4: BYD’s profitability analysis compared to the average of the industry in 2021 (in percentage).

| Comparator Ratio | BYD | The Average of the Industry |
|----------------------------|-------|-----------------------------|
| Return on Net Asset | 3.73 | 3.75 |
| Return on Total Asset | 1.60 | 2.57 |
| Return on Invested Capital | 3.81 | 2.36 |
| Gross Margin Ratio | 13.02 | 18.67 |
| Net Margin Ratio | 1.84 | 5.33 |

This may be due to the reason that BYD spends much money on research and development. BYD may be investing heavily in R&D to improve its products and stay competitive in the market. While this can be beneficial in the long run, it can also reduce net margins in the short term. What’s more, the price of BYD’s car is relatively lower than other new energy cars of other brands. On the other side, the company performed well on return on invested capital.

4.3. Operating Capacity Analysis

The turnover ratios can show how long a company holds its asset or liabilities before selling them.

4.3.1. Horizontal Analysis

BYD's operating capacity has seen a downward and an upward in these five years (seen in Table 5). The rate decreases from 2017 to 2019, but then surge to the highest point.

Table 5: Operating capacity analysis in five years' time.

| Year Ratio | 2017 | 2018 | 2019 | 2020 | 2021 |
|-------------------------------|------|------|------|------|------|
| Total Asset Turnover | 0.79 | 0.70 | 0.65 | 0.79 | 0.87 |
| Inventory Turnover | 4.97 | 4.71 | 4.12 | 4.43 | 5.03 |
| Accounts Receivables Turnover | 2.71 | 2.41 | 2.74 | 3.68 | 5.58 |

These all reflects that the company has efficiency in managing company's asset.

4.3.2. Vertical Analysis in 2021

The three rates are all well above the average of the industry, which show an optimistic view to shareholders (seen in Table 6).

Table 6: BYD's operating capacity analysis compared to the average of the industry in 2021.

| Comparator Ratio | BYD | The Average of the Industry |
|-------------------------------|------|-----------------------------|
| Total Asset Turnover | 0.87 | 0.34 |
| Inventory Turnover | 5.03 | 2.28 |
| Accounts Receivables Turnover | 5.58 | 2.88 |

BYD has a larger market share than its competitors, which could result in higher turnover. This could result from a variety of factors, such as superior product quality, better pricing, or more effective marketing and sales strategies. Also, BYD offers a wider range of products than its competitors, which could increase turnover. This could be because BYD offers a variety of electric vehicle models that appeal to different customer segments.

4.4. Growth Capability

The growth rate is the increase of a company's revenue comparing to the last year.

Table 7: BYD's growth analysis in five years' time (in percentage).

| Year Revenue | 2017 | 2018 | 2019 | 2020 | 2021 |
|--|------|-------|-------|-------|-------|
| Year-on-year Growth in Total Operating Revenue | 2.36 | 22.79 | -1.78 | 22.59 | 38.02 |

The growth rate of BYD's year-on-year growth in total operating revenue is significantly high in 2018, 2020 and 2021 (seen in Table 7). Although suffer from the pandemic in 2019, the company quickly recovered in 2020, showing great ability of operating in a whole aspect. In 2021, the average growing rate of car manufacturing rate is 8.35%. Compared to the average, BYD can have confidence in expanding its industries.

5. Analysis of the Problems Weakening BYD's Financial Competitiveness

5.1. High Debt Ratio

BYD has a high debt ratio, especially long-term debt. This could affect its capital structure and borrowing costs, reducing its ability to access capital while increasing its financial risk. However, as mentioned in the previous part, BYD needs plenty of investments in its business as it specialized in new energy cars, which directed result in a high debt ratio.

5.2. Product Pricing Strategy

BYD's electric vehicle pricing is low, which could affect the company's profitability. If pricing is too low, the company may struggle to realize sufficient profits to sustain operations and capital expenditures. This will result in a poor performance in profitability shown in the previous part. Though BYD take cost leadership as its strategy, this does not increase enough sale to generate a higher profit.

5.3. Investment in Technology Research and Development

BYD needs to continuously invest in technology research and development in order to maintain its leading position in a highly competitive market. However, these R&D investments may negatively impact its financial competitiveness as these expenditures may reduce the company's cash flow and profits, which may also raise the debt ratio.

5.4. Concentration of Revenue Sources

BYD's revenue sources are relatively concentrated, with most revenue coming from its automotive and battery businesses. This makes BYD's financial performance more susceptible to the impact of specific markets or products. For example, during the pandemic, its growth rate was below zero (-1.78%), which indicates that it suffered severely. Compared to industries specialized online, BYD is relatively more vulnerable.

6. Improvements

6.1. Improving Profitability

BYD can reduce the debt ratio by improving its profitability. To be more specific, it can first improve its operational efficiency by investing in new technology or optimizing its supply chain to improve efficiency. Also, it can expand its market share and increase sales volume. This can be done through expanding into new markets, introducing new goods or services, rewarding customers with special deals, or increasing the company's distribution network.

6.2. Capital Infusion

BYD can make capital infusion to attract more investments. It can form strategic partnerships with other companies that have complementary business models or technologies. These partnerships can involve the exchange of capital, resources, or expertise to help both companies achieve their strategic goals. Another way to raise capital is through venture capital firms. These firms invest in startup companies with high growth potential which suits for BYD. Other than venture capital, crowdfunding is also a suitable choice. Crowdfunding platforms allow companies to raise capital from a large number of individual investors. Companies can use crowdfunding to fund a specific project or to raise funds for ongoing operations.

6.3. Diversifying Its Revenue Stream

BYD can solve the problem of concentration of revenues by diversifying. For starters, it can invest in research and development to create new products that can appeal to different customer segments. This can include developing new models of electric vehicles or battery technologies that can be used in different applications. After that, if BYD has good customer loyalty, more customers would choose BYD and generate additional revenue streams through maintenance, repair, and other services. Besides, BYD can consider acquiring other companies that have complementary products, services, or technologies. This can help BYD diversify its revenue streams and expand its capabilities in different areas.

7. Conclusion

In conclusion, the study on the financial competitiveness of listed companies in the new energy vehicle industry, with BYD as an example, reveals that BYD has demonstrated impressive financial performance and competitive strength in the market. The analysis of financial ratios such as solvency, profitability, operating capacity and growth capacity, indicates that BYD has shown fluctuation in growth and profitability over the years. Additionally, the study highlights the importance of financial management and innovation as key drivers of competitiveness in the new energy vehicle industry.

Furthermore, the study identifies potential areas for improvement for BYD, such as reducing its reliance on debt financing and expanding its market share. Nonetheless, with the company's strong financial position, innovative products, and strategic partnerships, BYD is well-positioned to continue its growth and success in the new energy vehicle industry. The insights from this study can serve as a valuable resource for investors, analysts, and industry players seeking to understand the financial performance and competitiveness of listed companies in the new energy vehicle industry.

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