

Financial Analysis in CATL Based on Harvard Analysis Framework

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ABSTRACT

In the information age, with the rapid development of science and technology, the development of new energy technology has provided a new round of development dividends to more and more enterprises, but the rapid development of new energy technology is also accompanied by various hidden risks. The stable development of Ningde Times New Energy Technology Co., Ltd. has set a benchmark for the new energy industry and explored the reasons for its prosperity and development. With the help of the Harvard analysis framework, this paper makes a financial analysis of Ningde Times New Energy Technology Co., Ltd., studies and discusses the macro environment and its own micro environment, and puts forward suggestions on reducing production costs, expanding production capacity, looking for new R & D priorities and giving full play to the advantages of scale.

Keywords: *CATL, Harvard Analysis, Power Battery, New Energy Vehicles*

1. INTRODUCTION

The Harvard analysis framework is a systematic financial analysis framework that can comprehensively analyze the operation of enterprises and provide a reference for management decisions. This analysis framework can eliminate some false data that may exist in the traditional analysis framework, help to enhance the authenticity of financial analysis, and also help investors to have a full understanding of the situation of enterprises and even the whole industry, and the integrity of the analysis is also good [1]. Based on the annual report of CATL of power battery enterprises in recent years, this paper analyzes the enterprises from four aspects of strategy, accounting, finance and prospect by using the Harvard analysis framework in order to provide a reference for enterprises in the same industry.

2. THEORETICAL FRAMEWORK AND CASE ANALYSIS

2.1. Harvard analysis framework

Traditional financial analysis methods usually only analyze the financial statement data of enterprises, so it is difficult to comprehensively evaluate the overall operation of enterprises. The Harvard analytical

framework, proposed by three Harvard scholars, K. G. Palepu, P. M. Healy, and V. L. Bernard, is a systematic analytical framework. It is based on a strategic perspective and combines financial analysis to reasonably predict the prospects of enterprises. Harvard Analytical Framework not only focuses on corporate finance data, but also pays attention to the non-financial information of enterprises, which can solve the drawbacks of traditional financial analysis method and provide a reference for management decision-making. The Harvard financial analysis framework integrates the past, present and future and scientifically analyzes the past financial situation of enterprises from the aspects of strategy, accounting, finance and development prospects [2]. At the same time, it rationally speculates on the sustainable development and value characteristics of enterprises.

2.2. Case analysis

The low-carbon and environment-friendly new energy industry is gradually emerging, which has become a strategic emerging industry for China's future development and has been included in the "made in China 2025" [3]. Founded in 2011, CATL focuses on the research and development, production and sales of power battery systems and energy storage systems for new energy vehicles. Its core technology lies in the field of

power and energy storage batteries. It has the research and development and manufacturing capabilities of the whole industry chain, such as materials, cores, battery systems, battery recycling and secondary utilization, and provides solutions for global new energy applications. The CATL became one of the leading lithium power enterprises by focusing on technology research and development, industrial chain supply chain layout, capacity expansion and other factors. In the following, it will be analyzed in detail from three aspects: strategy, accounting finance and prospect.

3. STRATEGY ANALYSIS

The author will analyze the strategies of CATL through macro analysis and Porter's Five Forces Model.

3.1. Macroeconomic analysis

3.1.1. Global energy transformation strategy

In the context of global energy strategic transformation, Norway, the Netherlands, India and other countries have successively formulated a timetable for prohibiting the sale of fuel vehicles. Global energy transformation and automobile industry reform have become the inevitable trends of development. At the same time, as a big country of energy production and consumption, maintaining the sustainable development of energy, the economy and environment is a major strategic problem for China. After entering the 21st century, China has actively participated in international cooperation to deal with climate change, and gradually established a strategic framework of energy security with saving and efficiency as the core, trying to build a stable, economic and clean energy security system for economic development by changing the mode of economic growth. As the main force of the new energy revolution, China's new energy enterprises are gradually moving towards the world.

3.1.2. Development Strategy of New Energy Vehicles in China

With China's increasing dependence on imported fossil energy, China's domestic environmental pressure is gradually increasing. Therefore, the development of new energy vehicles is imperative, and the Chinese people also realized the necessity of the development of new energy vehicles. In order to be conducive to the development of the new energy automobile industry, and to make it develop, China has taken a strategic step forward by enacting a number of policies that will aid in the development of a new energy automotive industry. In September 2015, China's State Council issued the "Made in China 2025", which clearly put forward the "energy saving and new energy vehicles" as the key development field. Excessive subsidies and tax incentives stimulate the

enthusiasm of consumers to buy.

3.1.3. Preferential tax policies for new energy vehicles

According to the relevant provisions of the tax, the manufacturers of new energy vehicles are given VAT, consumption tax and corporate income tax incentives; for consumers who buy new energy vehicles, they will give the vehicle and ship tax, vehicle purchase tax, and VAT corresponding incentives. These policies have stimulated the sales of new energy vehicles to some extent.

3.2. Industry analysis

3.2.1. Competition of existing enterprises

There are many competitors in the power battery industry. The top five installed capacities of China's power battery enterprises are CATL, BYD, China Aviation Lithium, Guoxuan Gaoke and Yiwei Lithium Energy, with a high market share. With the domestic power battery industry entering a critical period of development, the existing power battery leading enterprises have more advanced technology research and development capabilities, better quality suppliers and larger customer groups, and will obtain more shares in the fierce industrial competition. In addition, enterprises such as BYD and AVIC lithium have clear plans to expand production, and increase technological investment to improve battery performance, so the CATL will face greater competitive pressure.

3.2.2. Potential entrant threat

In general, the threat of potential entrants is small, because the power battery industry is an industry with technology as the core, large investment and scale-based victory. The high efficiency, stability and safety performance of power battery products require long-term technological accumulation and testing. Without core technology, it is difficult for enterprises to produce competitive products. If new entrants want to enter the industry, they will face technical, financial and scale barriers. Therefore, the threat of new entrants is small.

3.2.3. Substitute threat

At present, the power battery is still the main energy of new energy vehicles. It can be seen that hydrogen fuel cells may have an alternative threat to power batteries in the future. However, hydrogen fuel cells are still in the research and development stage, the production and transportation costs of hydrogen are high, and there is still uncertainty whether they can be widely used. At present, there is no alternative threat to power batteries.

3.2.4. Suppliers' bargaining power

The CATL has been cultivating its own suppliers through equity participation, and decentralized suppliers to reduce costs, which is very obvious in the positive and negative fields. The CATL has strong bargaining power in these two fields, and suppliers in these two fields are relatively weak.

3.2.5. Buyers' bargaining power

In this era of great change, car companies need to pay attention to product reputation when they launch new energy vehicles, and so far, most of this reputation comes from the battery's endurance capacity. The result is that, under the advantage of nearly overwhelming capacity and technical indicators in CATL, car companies dare not use other battery companies' products easily, so the buyer's bargaining power is weak.

4. ACCOUNTING ANALYSIS

4.1. Inventory

The inventory of CATL has been growing from 2016 to 2020. The inventory in 2020 is nearly ten times that in 2016. With the continuous expansion of the overall business scale in CATL, it is obvious that the inventory of inventory commodities and raw materials in CATL is larger [4]. It also reflects that the sales of the company's products remain good. As the leader of power batteries, the scale of CATL is gradually increasing.

4.2. Fixed assets

The fixed assets in CATL were depreciated by the average age method. Due to China's policy support in recent years and the market expansion in the CATL, the business in the CATL has developed rapidly, and the investment in fixed assets has continued to increase. At the same time, the proportion of operating income of fixed asset stations has been increasing. Although from the data point of view, due to the good operation of fixed assets in the CATL, there is no sign of impairment and no provision for impairment, there will be a large amount of depreciation and amortization as fixed costs in the future. In the future, if this company wants to ensure a high gross profit, it needs to quickly recover the cost, otherwise, the risk is great. The depreciation method of fixed assets in CATL conforms to the provisions of accounting standards, and the trend of depreciation is in line with normal norms.

4.3. Analysis of R & D costs

If new energy enterprises want to maintain their advantages in the fierce market competition and maintain their original market share, they must constantly develop new products. The success of R & D (Research and

Development) activities will directly affect the company's long-term strategic development. Therefore, the analysis of R & D costs is very important. Through the continuous increase of R & D investment, CATL's own technology accumulation continues to thicken, and its R & D capacity and technical level are also in the industry's leading position. The number of R & D personnel and R & D investment in the CATL from 2016 to 2020 have increased year by year. In the composition of R & D costs in the CATL, R & D costs are mainly used to pay the employees' salaries of R & D personnel, which is a manifestation of attaching importance to R & D.

5. FINANCIAL ANALYSIS

5.1. Analysis of solvency

Debt-paying ability refers to the ability to repay debts. Solvency analysis is an important part of enterprise financial analysis, including short-term solvency and long-term solvency. This part selects three main indexes: the current ratio, the quick ratio and the asset-liability ratio [5].

When the current ratio is 2 and the speed ratio is 1, the short-term solvency of enterprises is the most normal. Based on the data from 2016 to 2020, it can be seen that the liquidity ratio of CATL is close to 2, and the speed ratio is about 1.5, indicating that the short-term solvency of CATL is relatively normal.

At the same time, this paper selects the asset-liability ratio to analyze the long-term solvency of the CATL. It is generally believed that the appropriate level of asset-liability ratio is 40% -60%. It can be seen that from 2016 to 2020, the asset-liability ratio of the CATL is in this range, indicating that the proportion of debt to assets in the CATL is low, and the asset-liability ratio is at a relatively appropriate level.

Table 1. Solvency Index of CATL from 2016 to 2020

	2016	2017	2018	2019	2020
Current Ratio	2.137	1.846	1.734	1.572	2.053
Quick Ratio	2.004	1.655	1.507	1.320	1.812
Asset-Liability Ratio	44.76%	46.70	52.36%	58.37%	55.82%

5.2. Operational capacity analysis

Operating ability is an effective reflection of the capital turnover of enterprises. By understanding the operation of enterprises, we can roughly understand their business conditions and management level.

This part compares the CATL of the new energy battery industry with 'BYD' and 'Gotion High-tech Co.,Ltd' two companies in the same industry, and analyzes

and evaluates the operational capacity level of CATL from two aspects of accounts receivable turnover and inventory turnover. According to the table, the turnover rate of accounts receivable in CATL decreased slightly in 2017, then continued to rise, reached its peak in 2019, and decreased slightly in 2020. In 2019, the current assets surged, and the turnover rate of accounts receivable increased. The reason was that the enterprise had more accounts receivable in the year, the enterprise recovered the accounts receivable in time, and the turnover period of accounts receivable was shortened. The inventory turnover rate in the CATL has shown a gradual downward trend in the past five years. This is because the growth of the company's business scale and the increase of

production bases have led to an increase in inventory, but its index is higher than the average level of the industry during this period [6]. Therefore, the company has the good working ability, and good inventory management and capital utilization. It can be seen from the table that in 2020, the new energy battery industry has been affected by the epidemic, and its inventory turnover days and accounts receivable turnover days have increased, which may be due to the difficulty of enterprise capital management, logistics tension, market economy recession and other factors during the epidemic [7]. The overall sales situation of the industry is not good, and the operational capacity is declining.

Table 2. Comparison of operation capacity of CATL in the industry from 2016 to 2020

Financial Indicators	Listed Company	2016	2017	2018	2019	2020
Accounts Receivable Turnover	CATL	2.78	1.974	2.089	2.697	2.57
	BYD	2.707	1.98	2.405	2.741	3.678
	Gotion High-tech Co.ltd	2.091	1.36	0.956	0.798	1.025
Inventory Turnover	CATL	6.977	5.333	3.793	3.501	2.943
	BYD	4.975	4.605	4.706	4.12	4.432
	Gotion High-tech Co.ltd	4.514	2.746	1.915	1.073	1.401

5.3. Profitability analysis

This paper selects the gross sales rate and net sales rate to analyze the profitability of CATL. From 2016 to 2018, the sales net profit and gross profit rate of CATL showed a trend of the increasing year by year, and there was a downward trend in 2018. The main reason is the cost increase of sales income and inventory price loss. According to the relevant data analysis in the table, the sales net interest rate, total asset profit rate, and net asset yield of CATL from 2016 to 2020 are in a state of decrease and fluctuation, with an average of 15.11 %, which is greater than the average amount of 6% of the industry. The decline of the net sales interest rate is related to the announcement of the ' notice on the mediation of the financial subsidy policy for the promotion and application of new energy vehicles ' published in February 2018. The product subsidy of new energy vehicle-related industries has declined, which has greatly increased the cost of battery production. Compared with the previous two years, the total asset profit rate and net asset return of new energy battery industry enterprises showed a downward trend, and the profitability was weakened. However, the CATL still developed in a good trend and had good profits.

Table 3. profitability indicators of CATL from 2016 to 2020

	2016	2017	2018	2019	2020
Gross-Profit Ratio	43.70%	36.29%	32.79%	29.06%	27.76%

Net Profit Margin	19.61%	20.97%	12.62%	10.95%	12.13%
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5.4. Growth capacity analysis

Investors mainly pay attention to the future development prospect of the enterprise and how much room for appreciation when investing. For the enterprise itself, to maintain good and healthy development, profitability will rise and the value of stocks will rise. The analysis of the development capacity of enterprises can help investors better understand the development status and future development of enterprises. Therefore, this paper mainly analyzes the development capacity of the CATL by referring to the growth rate of net assets and the growth rate of total assets. In the CATL, the growth rate of net assets in 2017 was -49.97, which was negative. In 2018, it gradually rebounded and even reached 52.53 in the third quarter of 2020. The growth rate of total assets has gradually decreased since the end of 2018. Based on the analysis of the industry and the enterprise itself, there are two main reasons: First, the company hopes to take measures to reduce the price of automobile power batteries to alleviate overcapacity; second, the company is in the growth period, in recent years the establishment of a number of research institutes and subsidiaries to occupy the domestic and foreign markets, so the sudden increase in fixed assets, which also led to the reduction of the total return on assets of CATL. However, through access to relevant information, the company's main machinery and equipment can be used normally in daily operation and production.[8] Property rights disputes do not exist, for has completed the completion of the

acceptance or follow-up need to deal with the property certificate but has been achieved pre-sale, there is no legal obstacles, so through the above analysis, CATL company's development ability is strong.

6. PROSPECT ANALYSIS

At present, the world is facing a resource crisis, coupled with the increasingly serious problem of environmental pollution, countries pay more and more attention to environmental protection and energy conservation. New energy vehicles are increasingly recognized worldwide and governments have issued new energy vehicle strategies. In the future, with the change of people's thinking consciousness, habits and policies, the global new energy vehicle market will inevitably be greatly developed. The continuous R & D investment and high-quality management and R & D team in CATL make the company have the leading technical advantages in the industry. Deep industrial chain cooperation makes the company form a strong integration advantage. As an industry leader with strong capital and technology, the company has broad prospects for future development. With the rapid development of the industry, market competitiveness and sustainable profitability will continue to increase.

But at the same time, with the outbreak of the new energy automobile market, domestic and foreign power battery enterprises have been attacked, superimposed on the influence of power battery technology change, CATL also faces great challenges from the same industry enterprises [9]. At the moment when the power battery enterprises occupy the dominant position in the market, many automobile enterprises have begun to seek other ways to get rid of the control of a single battery supplier, which has become a new threat to CATL. As the energy source of new energy vehicles, all parameters related to vehicle performance, such as endurance mileage and charging speed, are directly determined by battery performance. More importantly, the self-research and self-production of batteries by car companies can effectively avoid the dominance of battery manufacturers. Especially, in the case of insufficient capacity of battery manufacturers, they can achieve timely supplements and guarantees, and no longer need to worry about supply shortage and price war. Many car companies, taking the Great Wall as an example, do the same things, and have embarked on the road of self-research and self-production.

From the technical route, in the past, the business focus of CATL is the ternary lithium battery. Ternary lithium battery has the advantage of high energy density, and its endurance mileage is much higher than that of lithium iron phosphate battery under the same volume. Therefore, it has been widely selected by the market in the past period of time. But at the same time, the safety of ternary lithium battery is hard compared

with lithium iron phosphate battery. With the breakthrough of lithium iron phosphate battery technology represented by blade battery, the gap between lithium iron phosphate battery and ternary lithium battery in endurance mileage is becoming smaller and smaller. Thus, the advantages of ternary lithium battery are no longer as obvious as before. Based on this, the ternary lithium battery as the focus of the CATL, also needs to tell the capital market again a new story [10].

7. CONCLUSION

Through the analysis of the strategy, accounting, finance and prospect of CATL. This paper holds that despite the leading market share, the gross profit margin and net profit of the main business segments of CATL have declined, reflecting that the competition of domestic power batteries has entered a new stage. Under the trend of declining price, if CATL wants to win in the industry competition and continue to maintain the growth of profits, it must reduce production costs, expand production capacity and find new R&D focus. Give full play to their scale advantages.

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