Comparison of the Financing Approaches for New Energy Vehicle Industry

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Abstract. Contemporarily, driven by multiple factors, various new energy vehicle enterprises have developed rapidly but on the other hand. It also brings new opportunities, and various new industries rise rapidly. As new emerging enterprises, financing plays a vital role in corporation management. This paper will make a comparative analysis of various financing channels (bank loans, trust, equity financing, bond financing, venture capital, etc.). Meanwhile, in combination with the 'financing scheme selection' and 'major financing cases' of the four new energy automobile enterprises (Tesla, rivian. Lucid, NiO), the role of various financing schemes in the new energy automobile industry is studied and discussed by using the case analysis method, comparative case comparison method, literature analysis method and quantitative analysis method. The paper will give suggestions on financing channels for different new energy vehicle enterprises according to the research results. The purpose of the paper is to help the new automobile company with some advice and reference. These results shed light on guiding enterprises with different conditions to choose their own financing methods and provide financing suggestions for enterprises under different conditions.

Keywords: New energy vehicles; Financing channels; Steps of enterprise financing; Enterprise financing case analysis; Financing proposal.

1. Introduction

Since 2020, the global epidemic has had a tremendous impact on the world, and the world economy has been severely hit [1-5]. In recent years .but on the other hand ,it also brings new opportunities, and various new industries rise rapidly.For instance ,the influence of the Ukraine war cause the increase of the oil price. Moreover ,people's awareness of environmental protection has been strengthened ,the new energy vehicle technology has also been improved. All this conditions help new energy automobile companies develop rapidly. As an emerging enterprises, new energy vehicles are in urgent need of financial support for industrial iterative upgrading and technological innovation. Common financing methods are as follows: bank loans, trust, equity financing and bond financing, financial leasing, venture capital, pawn, factoring, entrusted loans and loan guarantee [6-8].

This paper will compare and analyse the financing methods and development models of several new energy vehicle brands, and give financing suggestions for new energy vehicle enterprises under different conditions. At present, the new energy automobile industry is developing rapidly and the technological innovation is rapid. All enterprises urgently need the iterative upgrading of the industrial chain. At the same time, the internal competition in the industry is fierce. Under the influence of the epidemic, the purchasing power of consumers is reduced, which also leads to the failure of enterprises to make their funds operate quickly, which has an impact on the stability of the enterprise's capital chain [9, 10].

Different financing modes have different advantages and disadvantages. For instance, the cost of bond financing is low, and financial leverage can be used to ensure the control of the company and facilitate the adjustment of capital structure. However, the financial risk is high, there are many restrictions and the financing scale is limited. (the research scope of this paper is not limited to bonds).

Enterprise financing is difficult. In order to solve the financing problems of enterprises at all levels, this article is specially prepared to compare and analyse the financing methods of enterprises under different conditions and explore the financing methods suitable for each enterprise under different circumstances. The research methods of this paper are case analysis, comparative analysis, content analysis, literature analysis and quantitative analysis.

2. Financing schemes

As for bank loans, it takes banks as the main body of operation, requires asset safety and capital return, and is the most commonly used financing channel for enterprises. Its main disadvantages are: harsh conditions, complicated procedures, short loan term and small loan amount.

With regard to securities financing (IPO) or equity financing, it mainly includes stocks and bonds. Securities financing is decided by investors, and the risk is directly borne by investors. The financing cost is high. The advantages of issuing shares are permanent fund raising, no repayment of principal and interest, high financing amount. Whereas disadvantages of stock listing are harsh conditions, long time span, fierce competition, information disclosure and decentralized control

For bond financing, it includes corporate bonds and convertible bonds. Corporate bonds are strictly required and most companies cannot issue them. Convertible bonds can only be issued by key development enterprises and listed companies. The advantages are long repayment period, few additional restrictions, while has disadvantages are complicated procedures and strict requirements. To be specific, convertible bonds can be regarded as a kind of special bond that can be converted into ordinary shares at a certain time and under certain conditions. The advantages are fixed income and appreciation potential. It has the following three characteristics: creditor's rights, equity, convertibility and low interest rate, which can reduce the financing cost.

As for trust, it has three functions: property management, financing and coordination of economic relations. The beneficiary may be the trustor, or may designate another person, or may be comprehensive. The trust property is legally independent and does not belong to the scope of the trustee's property.

Investment promotion (e.g., PE or VC) is a kind of equity financing, but it is not sold publicly and private investors are sought. The advantages and disadvantages are consistent with those of equity financing. However, there is no need to disclose information and it will not be acquired. This investment can promote financing.

3. Case of Tesla

Market positioning: the starting high-end occupies the user's mind, and the price sinking drives the significant volume. Tesla's product strategy starts from the high-end and captures the user's mind in advance. In the early stage of the development of the new energy automobile industry, the overall industrial chain was relatively immature, so the production cost was high. Therefore, the company launched high-end products at relatively high prices to seize the minds of users in advance. The first three models launched by Tesla are high-end models priced at more than $80000. Tesla launched roadster, a high-end pure electric sports car, in November 2008, with a price of more than $100000; Models was launched in June 2012, with a price of about $80000-$100000. In 2015, modelX was launched at a price of $80000-$120000. The financing performance of it is presented in Fig. 1 and Fig. 2.

Based on the advanced manufacturing technology, the production cost has been gradually reduced. The company has launched affordable products, realized the price sinking, and driven the delivery volume to increase significantly. Based on the scale effect brought by the company's CTP technology, integrated die casting technology and the increase in delivery volume, the production cost has gradually decreased, helping the company to launch more affordable products. In 2017, Tesla launched the model 3. At that time, the basic price was US $35000. The model used Tesla's latest

CTP technology. Compared with Tesla's traditional solution, the number of modules in the company's large model group solution decreased by about 70%, the number of vehicle parts decreased by 10%, and the overall battery cost decreased from US $185 / kWh to US $170 / kWh. In order to offset the upstream cost pressure, Tesla gradually increased the price, At present, the latest selling price is about 47000-63000 US dollars. In 2020, Tesla launched Modely, which was sold at 40000-60000 US dollars at that time. Modely uses Tesla's latest integrated die-casting rear floor assembly technology. The integrated die-casting technology forms all parts at one time. The number of parts is 79 less than that of model 3, the number of welding points is reduced from 700-800 to 50, and the weight of the car body assembly is reduced by 30%. Therefore, the manufacturing cost is reduced by 40%, The latest selling price is about 63000-68000 US dollars. To sum up, Tesla has achieved a significant reduction in manufacturing costs by virtue of advanced production technology and helped launch its affordable products.

The proportion of model 3 / y delivery with relative parity has increased year by year, from 2% in 2017 to 9.7% in 2021. At the same time, Tesla's total delivery has achieved a rapid growth, from 103020 vehicles in 2017 to 935950 vehicles in 2021, with a CAGR of 74% in 2017-2021. Based on advanced manufacturing technology, Tesla has helped product prices sink and achieved a rapid growth in delivery.

When Tesla just entered the market, it mainly focused on high-end models, so as to enhance its popularity in the industry and create brand advantages. Now, its brand advantages are available. At present, the main task is to reduce costs, reduce prices and grasp more middle and low-end markets. In the first seven years of Tesla's founding, Tesla barely survived on private equity and venture capital, most of which came from musk himself. Subsequently, after Tesla occupied a favorable position in the industry, Tesla began to rely on stocks to finance enterprises on a large scale, and the stock price has been soaring. So far, stock financing is the most important channel for Tesla financing. Meanwhile, Tesla is also relying on convertible bonds for financing.

Tesla used to be an enterprise with high risk of financial leverage but good development. In order to supplement the increasingly exhausted cash flow and reduce equity dilution (Tesla initially mainly used equity financing), it conducted convertible bond financing for many times. In 2014, when the operating cash flow was negative, it successfully raised more than US $2 billion by issuing convertible bonds, with coupon of 0.25-1.25% and conversion premium of 42.5%. In 2017, US $977.5 million of convertible bonds were issued to solve the shortage of funds, with a coupon of 2.38%. In 2019, Tesla issued US $977.5 million of convertible bonds for financing, with a coupon of 2%. In the face of high repayment risk, Tesla lowered the coupon and continued to lower the conversion price. The continuous rise of the stock price kept the risk at a low level. Tesla's successful financing is attributed to grasping the financing opportunity and fully understanding the financing environment.

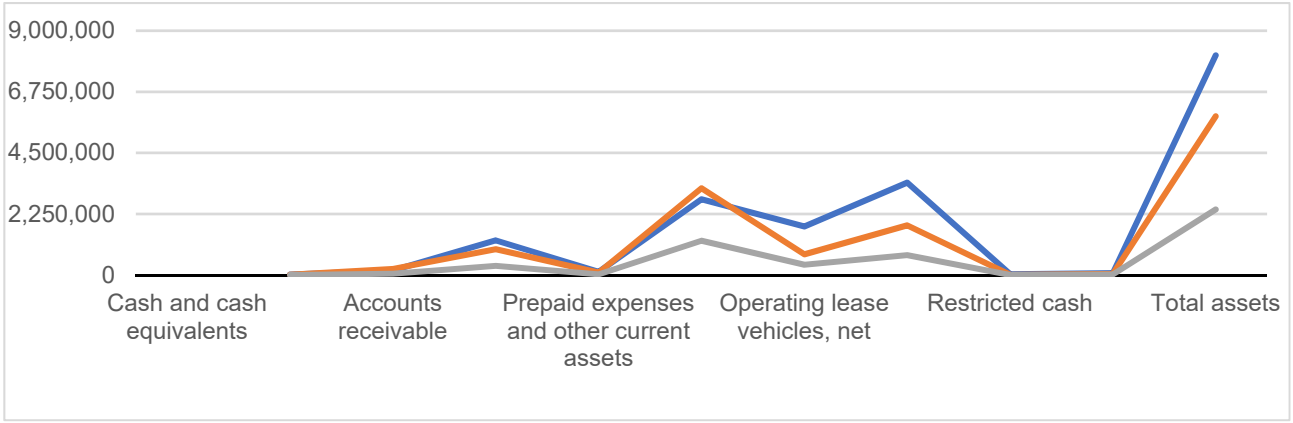


Fig. 1 Assets evolution of Tesla.

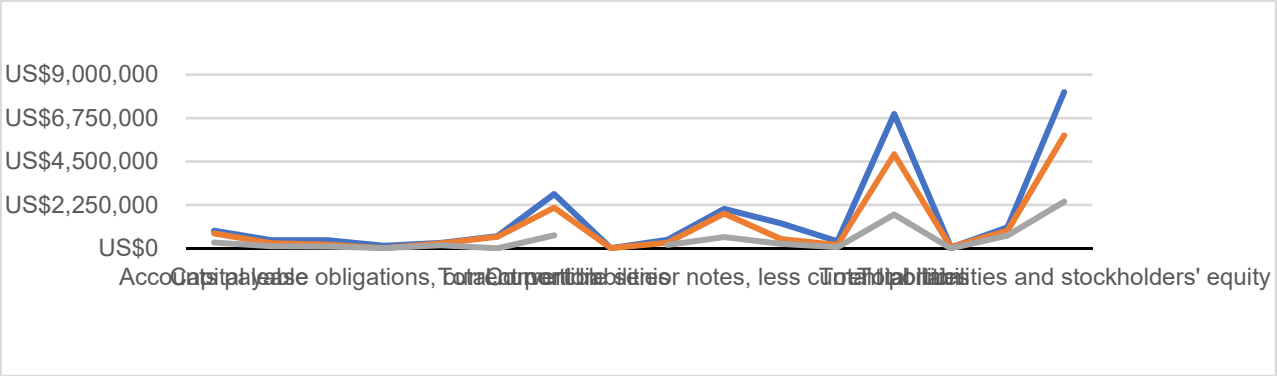


Fig. 2 Liabilities and Stockholders' Equity Current liabilities of Tesla.

4. Case of Lucid

In December 2019, American electric vehicle company lucid motors began the construction of the factory. In 2020, the company announced that the first phase of the project had been completed at the plant in the United States. The company's current production capacity is 30000 vehicles per year, and after 8 years, it will achieve more than 10 times growth. According to brother Jia Xiang, in Casa Grande, Arizona, the construction of this 590 acre lucid amp-1 (advanced manufacturing plant - 1) plant began on December 2, 2019, and the first phase of construction was officially completed within one year. By 2028, the company may. The visualization of the financing balance sheets of it are given in Fig. 3 and Fig. 4.

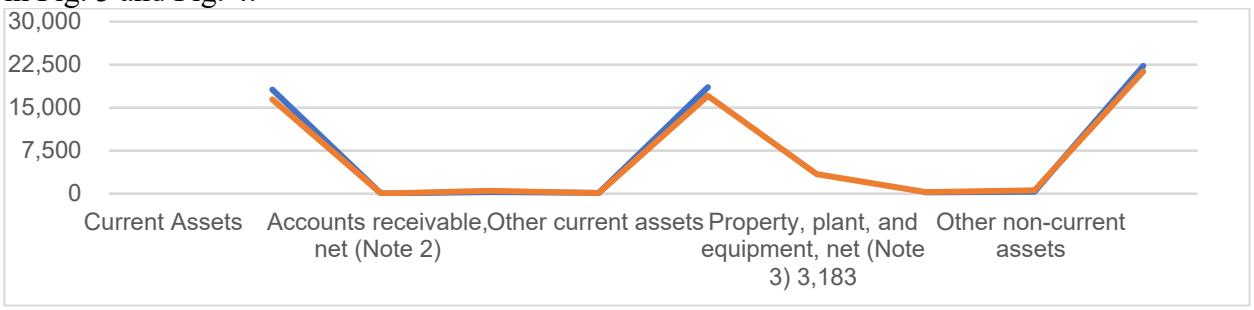


Fig. 3 Assets evolution of Lucid.

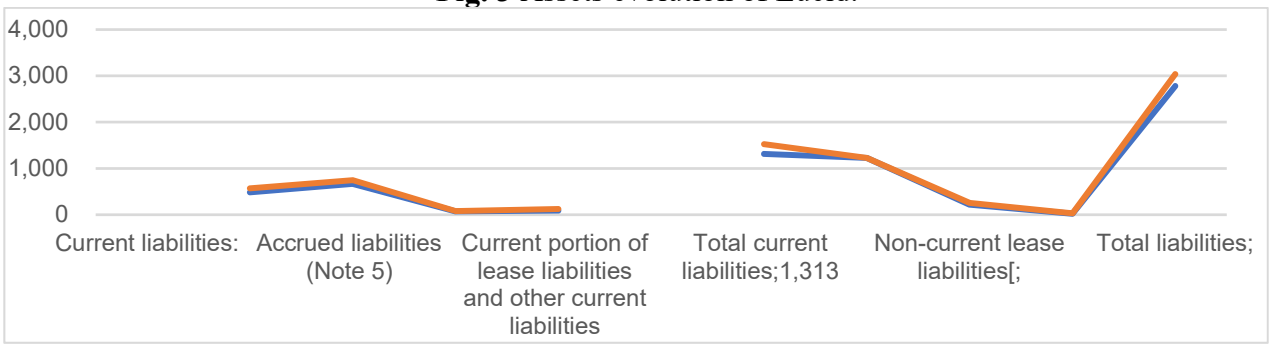


Fig. 4 Liabilities and Stockholders' Equity Current liabilities of Lucid.

It will gradually increase to the annual output of 400000 electric vehicles (producing various models). At the present stage, the initial capacity of the plant will reach the assembly of 30000 lucid air models every year, "to supply the global market, starting from North America", said the relevant person in charge of lucid. Lucid's ambitions are not limited to this. They hope that the annual production capacity will be 400000 vehicles by 2028. Based on the public information of lucid motors, the company was established in 2007. At first, the company was named atieva (from the abbreviation of "advanced technology in the field of electric vehicle application"). At first, the company manufactured batteries for electric buses in China, and later developed electric vehicles. Lucid has raised funds from a number of Asian investors: Qingyun venture capital, Mitsui Property Co., Ltd., Jia Yueting and BAIC.

The financing purposes of new energy vehicle enterprises mainly include:

- Product, service and technology R & D, manufacturing facility development and supply chain promotion, sales and marketing
- Replenish depleted cash flow
- Other working capital requirements

In recent years, people have made a lot of bets on many new energy companies, which is actually a big market illusion. People think that every new energy vehicle company can become a winner. For example, although rivian has no actual income so far, it has conducted at least eight rounds of equity financing in the past two years, with a total amount of more than US $10.5 billion. The IPO price ranges from $72 to $74, and the valuation may be as high as $65 billion. So many people think that rivian can surpass Tesla within five years. Rivian also has many rich shareholders. The main shareholder is Amazon. In 19 years, it ordered 100000 trucks from rivian, and in 19 years, it invested 700 million US dollars, with shares worth about 11.8 billion US dollars. T. Rowe price is the second largest shareholder of the company, with a share value of about 9.9 billion. Ford also invested in rivian to accelerate its transformation.

Lucid is also a new energy vehicle company. In 18 years, it raised funds through the public investment fund (PIF), an oil wealth investment department of the Saudi government. In 20 years, it merged with Churchill capital IV through the SPAC listing mechanism in the IPO. Since then, the market value has soared, exceeding the market value of traditional automakers such as Ford. The SPAC mechanism is an innovative financing method for backdoor listing. Unlike the shell buying listing, spac builds its own shell.That is to say, first establish a special purpose company, which has only cash and no industry and assets. This company will invest in the target enterprise to be listed. The target company will quickly realise the purpose of listing financing through M & A with the listed spac. In recent years, spac has been active in electric vehicles, green technologies, consumer oriented technologies, communications and retail industries.

Lucid's share price has soared more than 80% since it was listed through spac (a backdoor listing) in July 2021. As of the closing of the US stock market on the 16th, lucid's stock price was US $55.52, with a total market value of US $91.4 billion, exceeding that of Ford Motor (FN), but far lower than that of Tesla (US $10600).

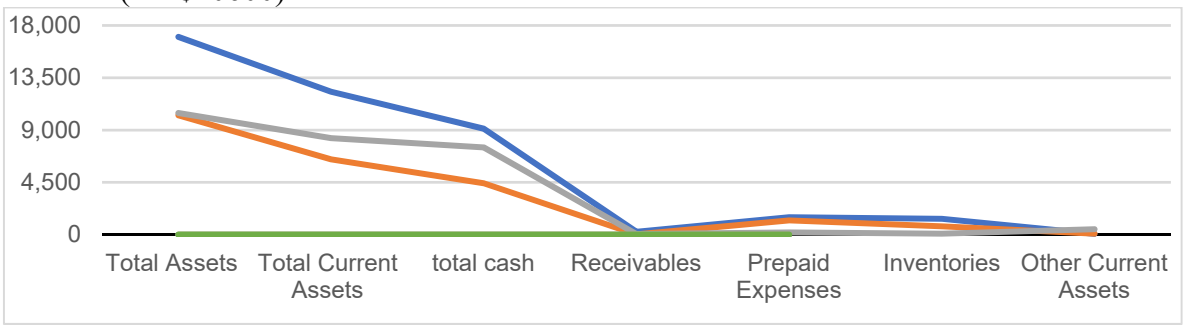


Fig. 5 Assets evolution of Nio.

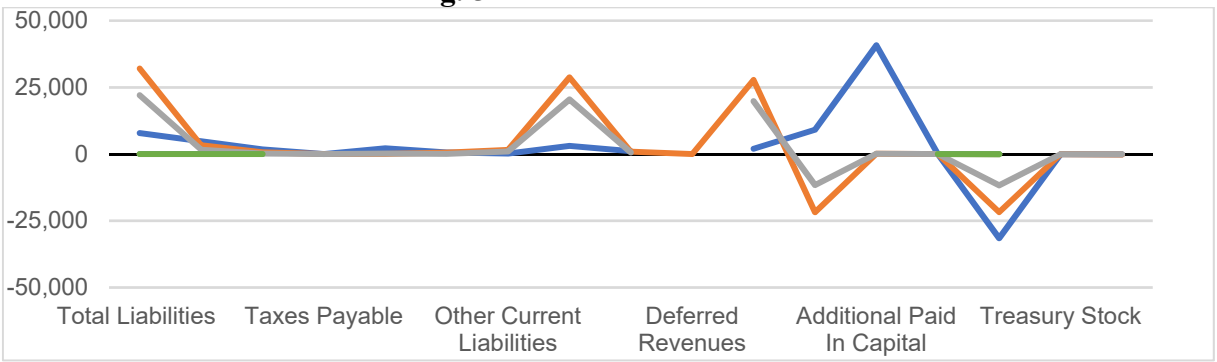


Fig. 6 Liabilities and Stockholders' Equity Current liabilities of Nio.

5. Case of Nio

China is a leading electric vehicle market. with the strong support of the state, China has become the largest electric vehicle market. More and more foreign automobile manufacturers are attracted to regard China as an export center. Chinese electric vehicle manufacturers have internationally competitive products. Such as xpeng and NiO, they can also obtain government subsidies and support from local governments.. NiO issued US $650 million convertible bonds on January 29, 2019, with coupon of 3.5-4% and conversion premium of 27.5-32.5%. Compared with Tesla, the coupon of 0.25-1.25% in 2014 is higher, but the market interest rate in 2014 is lower than now, so the coupon of 'Weilai' is relatively normal. Domestic listed companies generally hope to issue convertible bonds and eventually convert them into equity, because the financing cost is the lowest. Compared with the total financing cost of more than 10% in China, it is equivalent to low interest loans. The visualization of the financing balance sheets of it are given in Fig. 5 and Fig. 6.

6. Comparison

According to the comparison between lucid and rivian, spac mechanism can obtain a certain amount of funds in a short time, while equity financing can obtain a large amount of funds in a period of time. Rivian also improves its popularity and attracts more large enterprises to finance. Tesla's convertible bond financing model finds convertible bonds at the right time to supplement cash flow, which not only slows equity dilution but also reduces financing costs. Although the amount of NiO's convertible bond financing is much less than Tesla's, it is equivalent to a low interest loan compared with the high interest rate of other financing methods in China. China's initial innovative energy automobile enterprises prefer to use equity financing for financing. The enterprise does not need to repay the principal and interest of the funds obtained by the enterprise under the equity financing mode. This financing method can not only effectively reduce the debt pressure of enterprises, but also provide financial support for the development of enterprises.

7. Suggestions

This paper will divide the development of new energy automobile enterprises into three main stages, namely: Entrepreneurial period, growth period and mature period. To put forward the choice of financing channels. The entrepreneurial period is the initial stage of enterprise development, showing the characteristics of small scale, no income, unstable personnel and so on, and it is the time when the enterprise needs funds most. However, due to the uncertainty in all aspects, the success rate of investment is very low, and the investment subjects will not conduct a large amount of financing. At this time, the enterprise has the least resources, strength and attraction to finance. For example, in the first seven years of the company's establishment, Tesla barely survived on private equity and venture capital, and most of the funds came from musk. Such as BYD Xpeng, they have the support of their parent company and a large amount of self owned capital, which makes them successful. Based on the above characteristics, self owned funds, angel investment and venture capital have become the most suitable financing channels for enterprises to choose in this period.

It is the stage when the products begin to be introduced to the market. The enterprise is about to complete the product finalization and start to sell products and services. Although the technological risk of the enterprise continues to decline, the demand for capital increases rapidly due to the large investment in product research and development and no sales income. These characteristics make it impossible for self owned funds and angel funds to meet the needs of funds. Therefore, venture capital is its main financing channel. In addition, as the rudiment of the product has been formed, the technology risk of the enterprise is low, and private equity investment is also willing to invest in the growing enterprises. For example, NiO has used a large amount of private financing to meet the capital demand and strengthen the company's ability at this stage. Based on the above characteristics,

venture capital, private equity investment. Become the most suitable financing channel for enterprises to choose during this period.

The enterprises in this period have gradually formed a large economic scale, and their R & D, production and sales have been successful. Although there was income at the beginning, the high expenditure still exceeded the limited income. In this case, the enterprise begins to achieve the market share target, and has a certain market share, market recognition and low risk level. Therefore, all investors are willing to and have begun to invest in it. Although there are more ways for enterprises to finance, venture capital and private equity investment are undoubtedly the strongest financing force at this stage. Moreover, due to the expansion of asset scale, the increase of sales income and the reduction of investment risk, commercial banks also began to invest in bonds. Therefore, bank credit financing is also a main way of enterprise financing at this stage. Based on the above characteristics, venture capital, private equity investment, bond investment and bank credit. Become the most suitable financing channel for enterprises to choose during this period.

Mature enterprises have reached a high point in terms of enterprise scale, product market share, product market recognition, sales revenue and profitability. At this time, the income of the enterprise is higher than the expenditure, and the strength of all aspects has reached the requirements and standards of listing. The best way for the enterprise to raise funds at this stage is to issue shares through listing. At this time, the enterprise has a huge scale, strong profitability and reliable credit, and it is also the favorite of the commercial bank credit market. Bank credit financing is naturally a major financing channel for enterprises in the mature period. In addition, enterprise bonds can also be issued for large-scale bond financing. For example, Tesla, rivian and lucid, at this stage, they use listing to issue stocks, issue corporate bonds, use convertible bonds and bank credit to carry out huge amount of financing, expand the scale of enterprises with steady and rapid development, and stabilize the position of enterprises in the market. Based on the above characteristics, equity financing, bond financing and bank credit have become the most suitable financing channels for enterpries to choose in this period.

The development of an enterprise must go through three stages: the entrepreneurial stage, the growth stage and the mature stage. The actual situation of the enterprise and the financing environment it faces in each stage are different. Only by selecting appropriate, reasonable and correct financing methods and paths according to the actual situation of each development stage can the enterprise obtain the funds needed for the development of the enterprise, thus ensuring the development of the enterprise.

8. Limitations & Prospects

This paper only makes a comparative analysis from the perspective of financing channels, and puts forward suggestions on the selection of financing channels and the distribution of financing structure for new energy vehicle enterprises in different stages, but does not consider other factors such as the impact of the world situation, stock market fluctuations, and public opinion. The complexity and universality of the recommendations need to be improved. It is hoped that more comprehensive and higher financing channel selection suggestions and financing structure allocation suggestions can be given in the future in combination with more factors.

9. Conclusion

In conclusion, this paper first introduces the background of the new energy vehicle industry and expounds the research motivation. Then, it discusses the common financing methods of enterprises and makes a comparative analysis. Subsequently, by comparing and analyzing the financing situation of various new energy vehicle enterprises, the best financing mode of various new energy vehicle enterprises under different conditions is explored. As a rookie in the industry, a large number of start-ups are emerging. In order to promote production and R & D, enterprises urgently need a large amount

of financial support. Therefore, under different conditions and backgrounds, it is worth exploring and studying which financing mode enterprises choose. Taking this as the starting point, the group collected financing methods and financing data of new energy vehicle enterprises at various stages at home and abroad, and conducted comparative analysis to explore the optimal financing methods of enterprises under different conditions. This paper compares and analyzes new energy automobile enterprises such as Tesla lucid and BYD from the aspects of enterprise stage, financing status and financial statements. The final analysis draws a conclusion.

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