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The Potential for BYD's electric vehicle to build its supply chain in the United States

Yaohui Huang

New York University, New York City, United States

Email: ryanhuangyaohui@gmail.com

Abstract:

In the context of China's economic upgrading and transformation, China needs to find new opportunities and chances in the global market. China's willingness to spread its products, specifically electric vehicles, is increasing. In this paper, the essay will use SWOT and case analysis to analyze the possibility of BYD, a local electric vehicle car company highly famous in China, electric vehicle production lines in the United States. The core research conclusion is that even though implementing BYD's production line in the United States is difficult due to labor dispense, location variations, and material import aspects, it is a possible mission.

Keywords: BYD, electric vehicle, rare metals, Tesla, production line

1. Introduction

In this essay, the construction, technology foundation, production line, material used for production, and capital support of BYD will be discussed. This essay is mostly case-analyzing content derived from basic knowledge and different perspectives from respective essays. The significance of this essay is to summarize the advantages and disadvantages of BYD electric vehicles and their production line potential in the United States.

2.Literature review

Overall, many viewpoints consider the importance of Eco-friendly and high-value returns of electric vehicles. Many essays discuss the advance of BYD's technology and how efficiently its production lines are in Shenzhen, China. Its marketing strategy is comparatively more rational and global than other electric vehicle companies in China. However, according to the United States strategy in the world, unipolar and prevent China from making extreme profits in the global market, BYD faces severe challenges about how to solve the problems of high tariffs imposed by the United States and rare metals, significant material from constructing electric vehicles, and deficit. Moreover, Americans' passion for electric vehicles is less than that for oil cars. America's sophisticated second-handed oil car market plays a vital role in impeding the development of BYD electric vehicles, not Tesla. [2] The overall perspective towards the role of EV is optimistic, in fields of Environmental friendly and sustainable transportation[9]. However, due to the fact of diminishing rare minerals and increasing cost of tariff, Chinese EV needs to figure out a way to minimize the cost of transporting inputs and find a lucrative marketing strategy.[1]

3. Analysis

SWOT analysis includes four perspectives: Internal Strength, Internal Weakness, External Opportunity, and external Threats. This essay will extensively fo-

cus on these four viewpoints.

The internal Strength of BYD is its substantive and stable money supply. Its market in China is quite successful. According to BYD's yearly financial statement for 2023, it has made substantial progress and achievement in the Chinese and global markets. It shows that BYD is a promising and providential company whose growing potential has yet to reach its limit. BYD's revenue in 2023 is approximately 602,415,354,000, which is 42.04 percent higher than the last year. Its net profit has increased 82.01 percent from last year. Net cash flow from operating activities has increased by 20.51 percent. Its total assets have increased by 37.60 percent [8]. In order to build a complete production line in the United States, a substantial money supply is essential so that if an emergency occurs, BYD can withstand the storm and thrive in the rising period. At the very beginning of the construction of the electric vehicle production line, RMB plays an essential role in hiring workers and paying rent. Only after several periods can BYD make dollars and exchange its flowing currency from RMB to Dollars. Therefore, a substantial amount of RMB deposit is essential to select promising places to build factories and hire diligent workers to ensure enough electric vehicles appear on the market.

Moreover, BYD's investment in technology is also promising. According to BYD's 2023 financial statements, the number of R&D personnel is 102,844. Compared with 69,697 in 2022, the change rate is 47.56%. The number of R&D personnel accounted for 14.62% of the head office. There are 46,823 bachelor's degrees, 23,706 master's degrees, and 1,587 doctoral degrees. The proportion of decibel increase was 30%, 202.87%, and 168.98%. Most R&D personnel are less than 30 years old, which represents the extension of the research ability and working time of the researchers. Not only do they have more ideas, time, spirit, and willingness to research, but they also have more significant potential for development. In the research process, young researchers can accumulate experience and verify their ideas and concepts through continuous trial and error, thus innovating better technology for BYD companies. Furthermore, the company's R&D investment increased from 20,223,242,000 in 2022 to 39,917,743,000, with a change rate of 97.39%.[8] For a company primarily engaged in the electric vehicle industry, they should focus their money on the supply chain and car store consumption. Despite this, they still attach importance to scientific research capabilities, increasing the amount of research investment by nearly 100 percent

From the transfer of scientific research data to the scientific achievements that BYD already has, electric vehicle batteries are a long-term pain point for electric vehicles. Generally speaking, the average electric battery life of electric vehicles is about six years; BYD battery life is dependent on the type of battery; lithium iron phosphate battery life is 12 years or 160,000 kilometers, and the number of cycles can reach 3000-4500 times. Suppose someone pays attention to standardized driving habits and regular maintenance of electric vehicles. In that case, the lithium iron acid battery can used for about 12-15 years, compared with the average use time of electricity, which is about twice. Blade battery technology is ahead of other companies in this long interval.

BYD has yet to maintain a dominant role in the Chinese market because of internal weakness. Its rivals have always come up with it and always try to compete for a better position. BYD electric vehicles are not the most popular and sell in China due to other excellent electric vehicle brands. While implementing their production line in the United States, they have to face Chinese brand competition and Tesla. Furthermore, the cost of producing a single car needs to be higher. The rare metals and earths required to produce a single electric vehicle are still comparatively high. To become dominant in the electric vehicles market, it is essential to lower its need for rare metals since they are not renewable and might be depleted one day.

For external Opportunities, BYD, as a newborn electric brand in the United States, might attract many Americas since it is new and China-made. Due to the effects of the media and the Internet, American people are welcome and willing to try Chinese things, such as food, culture, games, and dialects. They are not internally opposed to Chinese products due to China's high reputation worldwide. Moreover, eco-friendly electric vehicles result in nearly no harmful gas emissions and usefulness waste. Moreover, the fuel price for electric vehicles is meager compared to oil, which plays a role as currency in the Middle East and the United States, fluctuating periodically every month and year. Due to its volatile characteristics, electric bills are relatively stable all year round, creating stable conditions for people who drive electric vehicles.

Could BYD build its construction line as efficiently as in China for external threats? Workers have different goals to protect their core technology from stealing from rivalries. BYD must find a way to balance the types of workers from China and America. Specifically, suppose BYD wants to increase the number of productions. In that case, it has to hire more workers, increasing the possibility that its core technology will be stolen from potential workers sent from rivalries or people who want to sell these technologies to make money.

Moreover, BYD has to realize the point is that American workers are less workaholic than Chinese. On average, the American working hours every day are at most eight hours. They can work up to eight hours, which might

cause injuries and cautious mistakes. In comparison, it is common for Chinese workers to work more than ten hours every day to make money, which half of Americans do. BYD not only has to hire more American workers since most of them can only work eight hours per day but also be careful when treating American workers. Workers' unions and corresponding parties can cause significant damage to production lines if they decide to have a parade or protest against administrates if they are unsatisfied with the wage. Other than that, rare metals, the significant material to build electric vehicles, need more storage in America and Canada. If BYD wants to increase its production and become productive, it will be restrained by the number of rare metals but by the number of workers. According to the U.S. Geological Survey, Mineral Commodity Summaries, January 2023, "The estimated value of rare-earth compound and metals imported by the United States in 2022 was 200 million, a 25% increase from 150 million in 2021. The estimated leading domestic end use of rare earths was catalysts. Many rare earths are imported as permanent magnets embedded in finished goods. Other end uses were ceramics and glass, metallurgical application and alloys, and polishing." "Import Sources (2018-21): Rare-earth compounds and metals: China 74%, Malaysia 8%, Estonia and Japan 5% each, and other 8 %" [1] That is to say, the storage of rare-earth and metals in the United States and nearby regions are comparatively rare in the world. In order to build its construction line, BYD has to find a way to save its input from shipping rare metals from China to the United States and find possible ways to get rare metals from its own, such as communicating with nearby countries such as Mexico or Brazil.

Most importantly, the competition between Tesla is also an external threat. Tesla has built its reputation and quality of production for decades. For a newborn brand, BYD has to find a different marketing strategy to improve its popularity and ability to compete, such as lowering its prices, providing unique products, or advancing technologies.

4. Conclusion

In conclusion, due to its advantage in money supply and willingness to invest its money, mostly from profit, investment, and innovation, BYD has an enormous advantage in the global market. It can put its production line in foreign countries, including the United States. However, we cannot ignore that BYD also has internal weaknesses and external threats. Maintaining its popularity in China and the United States simultaneously so that its currency can keep flowing is critical in implementing its production line in America. Moreover, external competition between Chinese electric vehicles and Tesla is also problematic; BYD has to figure out a proper way to market its product so that more and more American citizens are willing to purchase its product and become sticky consumers. Overall, BYD can solve the potential problem of internal and external competition from different electric vehicle companies and shipping rare earths and metals. In that case, BYD has a great chance to put its construction line on the ground in the United States.

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