

Analysis of BYD New Energy Vehicle Cost Management Strategy

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Abstract: Under the new development concept and "dual carbon", in line with the concept of green and environmental protection, in order to achieve the goal of "carbon neutrality", the development direction of China's automobile industry has gradually shifted from traditional vehicles to new energy vehicles. The government has issued a series of new energy policy support to vigorously develop the new energy industry, and domestic new energy vehicles have quickly entered the world vision. This paper takes BYD's new energy vehicles as the research object. Through the research on the value chain analysis tools and its cost management, it finds that BYD has excessive vertical integration, insufficient research and development efforts, and cost management haven't adapt to the economic environment. In view of the above problems, it comes to the conclusion that the supply chain should be optimized and improved, targeted research and development efforts should be increased, and cost management data should be improved.

Keywords: BYD, value chain, cost management, enterprise strategy

1. Introduction

With the implementation of the "13th Five Year Plan", China's new energy vehicle industry has developed rapidly and gradually become a new world in the field of new energy vehicles in the world. Relevant data show that in November 2018, the production and sales of new energy vehicles totaled 342000 units, up 37.6% year on year. By 2019, new energy vehicles have accounted for 3.5% of the entire automobile market [1]. The battery panel, motor, electric control system and supporting facilities charging station in new energy vehicles are all emerging fields in China. The emerging fields open up a new way for market participants, which has promoted a large number of enterprises with strong innovation ability to develop and launch various new energy vehicles in the market. The 14th Five Year Plan conference announced that China has basically built a localized electric vehicle supply chain system after more than ten years of development problems such as the dependence on imports of key technologies and resources have made China's new energy vehicles "going global" face greater competitive pressure. This article deeply analyzes the problems of BYD new energy vehicles in strategic cost management, and proposes targeted measures and suggestions to help enterprises more accurately carry out cost management and improve their core competitiveness.

2. Current Situation of BYD Cost Management

2.1. Value Chain Analysis

2.1.1. Industry Value Chain Analysis

As a new energy company, BYD has gradually started to adjust from the company's upstream value chain, realizing a processing production chain that includes almost all parts, from batteries to motors to electronic controls. Through a high degree of vertical integration, BYD's new energy vehicle business has not only achieved self-sufficiency in core parts of new energy vehicles and reduced dependence on external core suppliers, but also improved the operating profit of the business by optimizing production links, reducing vehicle production costs and improving the operating profit of the business. In terms of further developing new energy vehicles, BYD improves the understanding of customers on all aspects of new energy vehicles, actively develops new energy vehicle rental business, improves product utilization, and thus enhances the enterprise's core competitiveness in the market. Through the joint adjustment of the upstream value chain and the downstream value chain, the enterprise's strategic cost has been significantly reduced [2].

2.1.2. Enterprise Internal Value Chain Analysis

On the whole, the research can compose of two sections: basic activities and auxiliary activities. The former part consists of the production mode of "purchase production shipment sales" and its logistics and after-sales work, and its production scale is determined by the traditional "production based on sales" mode. In the production process, the semi-automatic and semi manual production line operation of BYD New Energy Vehicles has caused intensive manual work processes. Its auxiliary activities mainly focus on the management of facilities, technology, products and manpower, such as the maintenance of equipment, technological innovation and control of product quality.

2.2. Cost Management Analysis

As shown in Table 1, the cost is mainly composed of R&D, manufacturing and marketing costs.

Table 1: Cost composition of BYD new energy vehicles [3].

Components	One	Two	Three	Four	Five
Research and development costs	Investigation and research	Plan	Research and development	Product test	Initial production of products
Manufacturing cost	Raw material procurement	Production costs	Equipment depreciation	Product inspection	Environmental protection
Marketing cost	Brand promotion	Partner Management	Sales promotion	Expand the market	Create demand

2.2.1.R&D Cost Management

BYD invested 5.63 billion yuan in R&D in 2019, up 12.8% year on year. Compared with 2018, R&D expenses far exceeded sales, finance and management expenses. And from 2015 to 2019, the compound annual growth rate of enterprises' investment in R&D reached 32%, which is at a high level in China's automobile industry. Although the company continued to invest resources in R&D, to a certain extent, it consolidated and enhanced its core competitiveness, but it negatively influence the enterprise's operating profit and still had the problem of low R&D efficiency and resource utilization efficiency, so it still needed to enhance the management of its R&D costs.

Table 2: Research and development investment of BYD new energy vehicles in 2015-2019.

Index	2015	2016	2017	2018	2019
R&D expenditure (100 million yuan)	20.0	31.7	37.4	49.9	56.3
Annual sales volume (10000 vehicles)	5.89	10.02	17.98	22.72	22.95
Average R&D investment (yuan/vehicle)	33,921.9	31,656.7	26,795.3	21,958.6	24,527.2

2.2.2.Manufacturing Cost Management

From the purchase data, the inventory turnover index of the enterprise during 2015~2019 is decreasing little by little. Through the data in Table 3, it can be seen that the inventory of BYD's new energy vehicles increased from 128 million yuan to 259 million yuan, depicting an over-round growth trend in 2019, and the inventory turnover rate in 2019 was 20.31% lower than that in 2015, which indicates that in 2019, the information processing of all nodes in the procurement process of BYD's new energy vehicles is lagging behind. And because of the impact of the automotive environment, it was suppressed by external negative factors after 2019, and at that time, various departments didn't manage to conduct a timely and effective communication, which led to the consequence that the information related to parts and raw materials was not shared in time , and the insufficient control led to a backlog. If the sales and inventory clearing speed is not fast enough, the procured materials will be overstocked and further waste their own procurement costs.

Table 3: Inventory turnover rate of BYD new energy vehicles in 2015-2019.

Index	2015	2016	2017	2018	2019
Average inventory (100 million yuan)	128	166	186	231	259
Main business cost (100 million yuan)	665	824	858	1087	1069
Inventory turnover rate (times)	5.17	4.97	4.61	4.71	4.12

2.2.3.Marketing Cost Management

According to Table 4, the average sales cost of BYD new energy vehicles has been gradually declining in the past five years. Although the average selling expenses in 2016 increased compared with that in 2015, in general, 2019 decreased by 49.77% compared with 2016. The annual sales volume of BYD's new energy vehicles increased by 21.65% from 2015 to 2019, mainly because

BYD's new energy vehicles have a good development prospect in the past five years, and due to the incomplete interior new energy vehicle market, consumers' recognition and focus of such products are not sufficient, which has helped BYD to build a good market. However, BYD still have the necessity to strengthen the publicity of its products.

Table 4: Average sales expenses of BYD new energy vehicles from 2015 to 2019 [3].

Index	2015	2016	2017	2018	2019
Sales expenses (10000 yuan)	68,831.8	419,633.9	182,235.7	1,898,179.2	134,722.8
Annual sales volume (10000 sets)	5.89	10.02	17.98	22.71	22.95
Average selling expenses (yuan/set)	11,686.2	13,820.2	10,135.5	8,330.2	5,870.3

3. Problems in BYD's Cost Management

3.1. Excessive Vertical Integration of Industrial Chain

BYD's excessive vertical integration and blind expansion of the enterprise's internal value chain have increased the difficulty between various departments, which has caused the enterprise's inventory backlog. From 2012 to 2020, the growth rate of BYD's inventory will gradually accelerate, from 10.85% to 22.77%. The inventory turnover rate has been declining in recent years, from 6.13 times to 4.43 times [4], indicating that because BYD continues to vertically integrate the industrial chain, each link of integration must have inventory retention, which has led to the accelerated growth of inventory in enterprises. In addition, due to the blind expansion of the company's industrial chain, the company's business operations are somewhat powerless, the inventory turnover rate is slow, and the inventory turnover rate generally shows a downward trend.

3.2. Low R&D Efficiency

It can be seen from the above analysis of R&D cost management that BYD's new energy vehicles have shown an overall upward trend in terms of R&D investment and the ratio of R&D investment to operating income in the past five years. R&D expenditure has increased by about three times in the past five years. From 2015 to 2019, R&D expenditure accounted for more and more of the operating revenue of the year, which would also lead to a decline in profits due to excessive R&D expenditure. From the perspective of the ratio of R&D investment to operating revenue, it has slowly decreased from 5.5% in 2012 to 4.37% in 2016 [4]. Although it has increased in recent years, the overall trend is fluctuating and declining. According to the analysis of BYD's annual report from 2015 to 2019, although the new energy vehicle business income has increased significantly, the overall cost of BYD's operation has increased significantly due to the increase of expenses and the reduction of subsidies, and the operating growth has exceeded the revenue, which naturally has a negative impact on profits.

3.3. Cost Management Is Not Suitable for the Current Economic Environment

The domestic market pattern is now changing from the seller's market to the buyer's market. The change of this process has a direct impact on the product cost structure of new energy vehicles, and the pace of driving is: the proportion of productive expenses has plummeted, while the cost of circulation has soared [5]. The proportion of these two parts has been reversed, and the enterprise

has shifted its focus from producing better products to marketing and other means, resulting in the inability to meet the needs of current cost management and falling into a vicious circle.

4. BYD New Energy Cost Management Countermeasures

4.1. Continuously Optimize and Improve the Value Chain

In view of the problem of excessive vertical integration, the author believes that the supply chain of BYD's new energy vehicles should be further opened to reduce costs. The product supply chain of BYD's new energy vehicles has gradually been fully liberalized, and the internal parts suppliers have also set up companies with independent legal persons, which is more conducive to the external sales of products. The development cycle of new cars is about 2 years, and there will be a certain cycle from opening up to large-scale external delivery [6]. It is suggested that BYD should speed up the pace of external supply of new energy vehicles and outsource some low value-added parts. BYD realizes zero inventory through strategic cooperation with high-quality parts suppliers, thus reducing the total cost of inventory. BYD can use its strong R&D capability to focus on the R&D and production of high value-added components, which will maximize the reduction of new energy vehicle production costs, and can also earn high value-added components, improve corporate profits, and thus enhance corporate competitiveness. Increase the investment in foreign sales and product technology docking, further improve the product line of your own enterprise, and maintain the competitiveness of your enterprise.

4.2. Increase R&D Efforts

In view of the problem of insufficient R&D efforts, the author believes that targeted R&D in innovative aspects is needed. In addition to the "three electricity" system, company should increase the research and development of automobile chassis, suspension, "automatic driving" and master control system, attract high net worth customers to buy our own products by improving product strength, and finally drive more ordinary customers to buy our products by guiding publicity. Then, on the basis of customers' purchase of products, through the introduction of hardware packages and "autopilot" software packages, consumers will be attracted to further consumption, so as to increase enterprise income [7]; Vigorously incline resources to automatic driving technology and other fields, improve the competitiveness of their products and obtain excess profits by improving intelligent services.

4.3. Improve Cost Management Data to Make Cost Management More Comprehensive

Firstly, enterprises should improve the quota management system and judge the necessity of expenditure and savings; secondly, enterprises should ensure the integrity of the original record system, ensure the corporate culture from beginning to end, and do not change the concept of the enterprise; finally, enterprises should carry out comprehensive economic accounting according to market demand, and include external related costs in the calculation to make cost management more accurate [8].

5. Conclusion

This paper analyzes BYD's cost management strategy by using value chain analysis tools and analyzing its cost management, finds out the existing problems, and then proposes measures that it BYD should keep optimizing and improving its value chain, increase its proportion of R&D efforts and consider its cost management analysis more comprehensively. It is hoped that the country will introduce relevant laws and regulations as soon as possible, plan the market, and make the

consumption environment more reasonable and sound. It is also hoped that BYD will strengthen the research on strategic cost management, solve the problems caused by enterprise cost management, establish a sound production environment, strengthen strategic cooperation with relevant enterprises, and promote the steady development of enterprises.

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