

The Motivation and Performance Analysis of the Multinational Strategic Alliance between BYD and Toyota

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Abstract: With the rapid development of our economy and society, people's life has been improved and living standards have been improving. The number of domestic motor vehicles has been increasing and the per capita vehicle share has been further improving. And as people's awareness of environmental protection continues to strengthen, traditional cars are gradually being replaced by new energy vehicles.^[1] Therefore, in the increasingly fierce new energy vehicle market, it has become one of the important ways for domestic automobile enterprises to develop and expand their business to reach cooperation with large foreign companies, form strategic alliances, develop more competitive new products, provide customers with better quality products, set up the benchmark of the industry, and improve the competitive strength of enterprises.

On November 7, 2019, Toyota Motor Corporation and BYD Co., Ltd. signed a joint venture agreement on pure electric vehicle research and development company, and on March 25, 2020, the joint venture between Toyota and BYD was formally established. Company name: BYD Toyota Electric Vehicle Technology Co., LTD. The new company is located in Pingshan District, Shenzhen. The registered capital of the company is 345 million yuan, Toyota Motor Corp. and BYD Co. Ltd. each hold 50% of the shares, and the subscribed capital amount is 172.5 million yuan. The new company will be engaged in the design and development of pure electric vehicles and the platforms and components used in the vehicles. The strategic alliance helps both sides complement each other's advantages, expand the market, cope with competition and share costs.

Therefore, this paper will study the process, motivation and performance of this transnational strategic alliance from the perspective of BYD. And put forward suggestions for further cooperation after the alliance, so as to provide reference and inspiration for Chinese enterprises to carry out transnational strategic alliance to boost the development of automobile industry.

1. Introduction

In recent years, with the rapid growth of our per capita GDP, the national economy has developed from high speed to high quality, the number of domestic motor vehicles has been increasing, and the per capita motor vehicle ownership rate has been further improved. Since 2009, the country has gradually promulgated many policies related to new energy vehicles. In addition, along with people's strengthening awareness of protecting the environment, new energy has gradually replaced traditional

oil and other energy sources to become the main energy sources used by everyone.^[2] New energy vehicles are thus favored by young people such as the post-90s generation, especially in some first-tier cities, because first-tier cities have better basic supporting facilities to match with new energy vehicles. Therefore, the research and development and manufacturing of new energy vehicles will inevitably become the new direction of the future development of the automobile industry. BYD, one of the research objects of this paper, is mainly engaged in battery business, production and assembly of mobile phone parts and automobile production. It not only produces automobiles using traditional petroleum energy, but also has strong advantages in research and development and production of new energy vehicles.^[3] It is also constantly expanding its business in the field of new energy vehicles and developing it into its advantageous business field. Since the 11th Five-Year Plan, it has noticed the development potential of new energy vehicles and believes that new energy vehicles will be the trend of the future development of the automobile industry. BYD got into the NEV business shortly after buying Qinchuan Automobile in 2003, so it has been in the NEV business for nearly two decades. As the first entrant in China's new energy vehicle market, BYD has established the industry standard and become a benchmark in this industry. It also has an irreplaceable position in the hearts of Chinese consumers and has formed a kind of adhesion with consumers.

In such a macro-economic context, this paper chooses the case of the multinational strategic alliance between BYD and Toyota as the research object. By analyzing the starting point, characteristics, advantages and challenges of the multinational strategic alliance, this paper proposes solutions and opinions to the objects of the alliance. I hope to summarize some problems and troubles that Chinese enterprises may encounter in the alliance process from the companies that have formed the alliance, and give them a hint so that they can design a risk prevention measure and mechanism before formally forming the alliance, so that the road to the future alliance can be smoother and smooth, so as to improve the competitiveness of enterprises.

2. Introduction of Alliance Subject

2.1 Introduction of BYD

BYD Co., LTD. founded in 1995 and located in Shenzhen, Guangdong Province, was listed on the main board of Hong Kong on July 31, 2002. It is a new technology private enterprise with three industrial clusters of IT, automobile and new energy. Now it is the largest rechargeable battery manufacturer, and the largest nicad battery and mobile phone lithium battery shipments in the world. In 2003, BYD acquired Xianqinchuan Automobile Co., LTD. officially entered the field of automobile manufacturing and sales, and began the development of national brand cars. Subsequently, BYD successfully launched solar power stations, energy storage stations, and pure electric vehicles, and rapidly grew into the most innovative new national brand, more with unique technology leading the global electric vehicle market.

BYD's new energy vehicles have great advantages compared with other brands of new energy vehicles. We can summarize it into three advantages: First, support for self-owned brands. BYD is the first echelon of domestic self-owned brands, and its brand awareness, market sales and new energy technology are all commendable. Second, excellent technology, not only can allow users to save fuel costs but also can let consumers can rest assured that they do not need to worry about the car will break down during the journey. The third is the pursuit of quality, with an international vision, the production department set up in various locations around the world and products sold around the world.

2.2 Introduction of Toyota

Toyota is currently the world's largest automobile manufacturer, headquartered in Japan's Aichi Prefecture and Tokyo's Bunkyo District. In 2020, Toyota ranked first in the world in terms of vehicle sales, reaching 9.52 million units. Toyota ranks No. 10 on the 2020 Fortune Global 500 list. Toyota ranked second in the world in terms of vehicle sales in 2019, with about 10.74 million units. Toyota's largest single market in 2019 was the United States, which contributed about 2.76 million units. Toyota Motor Corporation sold about 1.62 million units in China in 2019, most of which were contributed by joint ventures FAW Toyota and GaC Toyota, which ranked 11th and 13th among domestic passenger car manufacturers respectively. In 2020, Toyota's largest market will still be North America, with annual sales of about 2.31 million units, and China with about 2 million units. Therefore, Toyota occupies a position that cannot be replaced by other automobile manufacturers in the automobile industry, and its production and sales volume are incomparable to those of other automobile manufacturers. So far, Toyota's business scope covers all over the world, but its main operation center and main business source are still concentrated in Europe and the United States, and its sales volume in China needs to be further strengthened.

3. The Motivation for Byd's Multinational Alliance with Toyota

3.1 Complementary Advantages and Improve Their Own Competitive Ability

At present, the trend of automobile electrification is becoming more and more intense, and the world's top automobile brands have entered. Who takes the lead, who can enjoy a bigger cake in the future market^[4] It is safe to say that the automobile industry is moving from the fuel era to the electric era, which will split the market pattern to a great extent. All major automobile brands are facing a new reshuffle, which is both an opportunity and a challenge. After the strategic alliance between BYD and Toyota, BYD can rely on Toyota's strong brand advantages and multi-dimensional marketing channels to further realize the in-depth export of its electric core components. Toyota is one of the world's largest car companies, its technical reserves and strength is beyond doubt. As the pioneer of hybrid models, Toyota has sold more than 10 million hybrid models worldwide since the first mass-produced hybrid model Prius in the 1990s.

Toyota is the No. 1 player in hydrogen fuel cell vehicles. As early as 1992, Toyota began to develop hydrogen energy vehicles. It was not until 2014 that it launched Mirai, the first mass-produced hydrogen car that can be used in the extreme cold of minus 30 degrees Celsius, with a full 3 minutes and a driving range of more than 500 kilometers in Japan. By 2017, Toyota had 15,867 patents related to fuel cells.

3.2 Enhance Brand Premium Ability

BYD's cooperation with Toyota will bring BYD better brand premium ability. Toyota sales in the world is one of the best, "where there is a road, there is a Toyota" market share. The cooperation between the two parties will have a better promotion of BYD's product power and technical level in the future. From the technical point of view, engineers and technical departments of both sides are bound to carry out in-depth discussion and research in the future, which will greatly improve BYD's existing platform and technology.^[5] This will bring more cooperation opportunities for BYD and further expand the road of international development.

3.3 Policy Support

Despite declining sales and the impact of the epidemic in the auto industry in recent years, there is still good news for electric vehicles in China. ^[6] The executive meeting of The State Council on March 31, 2020 confirmed that the new energy vehicle purchase subsidy and vehicle purchase tax exemption policies, which expire at the end of the year, will be extended for two years. This heavy - pound good news, to the industry felt pleased and encouraged. This policy will boost the domestic electric vehicle market and support auto companies to firmly take the road of new energy transformation. The national promulgation of this policy mainly wants to express the content is to promote the reform and upgrading of the environmental protection system, so that the environment can be further improved, and to a certain extent further open the door of the electric vehicle market to promote its further development, which is no different from another "tuyere" of new energy vehicles. Subsidy decline, has been highly concerned about the industry. Since the second half of 2020, there have been "eight consecutive monthly declines". On January 11, 2020, Miao Wei, Minister of Industry and Information Technology, said publicly that he would not retreat in the first half of the year at the 2020 China Electric Vehicle Forum for White people, which caused a strong response. At this time to catch up with this wave tuyere, for Toyota, BYD cooperation is a big good news.

3.4 Use Alliances to Cope with Competition

Domestic automobile has entered a new transition stage, the overall irreversible decline, but also appeared unprecedented competition situation, which makes the cooperation between enterprises, pay more attention to the quality and depth of cooperation, only in this way, the development of cooperation between the two sides can be more reliable and favorable. BYD's tie-up with Toyota is surely aimed at capturing more market share for entry-level electric vehicles. After all, Tesla and Volkswagen's "Shanghai Beach showdown" has already begun. On November 7, 2019, Tesla showed off its new domestically produced Model 3 to the Chinese media at the factory it built in just 19 months. ^[7] It can be predicted that the next few years, will undoubtedly be joint ventures and Chinese brands in the field of new energy vehicles comprehensive competition years. Nowadays, new things are emerging in the car market, which must learn to grow in controversy and grow in confrontation.

4. Analysis of the Practical Effect of Byd and Toyota Strategic Alliance

4.1 Analysis of BYD's Financial Performance after the Implementation of the Alliance

4.1.1 It is Conducive to BYD's Global Strategy

In order to adapt to the trend of economic globalization and market demand, BYD is willing to take the lead in the globalization market. In 2021, BYD announced that it would expand the layout of new energy vehicle passenger vehicles into the European market. Norway, a country in northern Europe, became the first stop for BYD to enter the European market, starting a new journey of electric mobility. ^[8] Since Toyota's previous sales market was mainly concentrated in Europe and the United States, Toyota has accumulated a large number of production and sales experience and sales channels in the United States and Europe, which will provide strong impetus for BYD to enter the European market. It will boost BYD's brand awareness abroad and quickly establish an image of its own, helping BYD gain access to a foreign market and achieve its global strategic goals.

In 2020, 222,855 Chinese new energy vehicles were exported overseas, including 72,677 exported to Europe, a year-on-year increase of 211%, indicating that the European market has become the main

market for China's new energy vehicle exports. Among them, BYD's total sales volume of new energy vehicles in 2020 was 1,898,689, and completed the delivery of orders to the United Kingdom, Sweden, Germany and other countries within the year. BYD's market share of pure electric vehicles in Europe exceeds 20%. That is, in 2020, BYD's exports of new energy vehicles to Europe will mainly focus on electric buses, while exports of new energy passenger vehicles to Europe will be very small. However, in 2021, according to the data of the foreign website EU-EVs, the sales volume of BYD's new energy cars in Europe in that year was 1,247, which is a very big breakthrough for BYD.

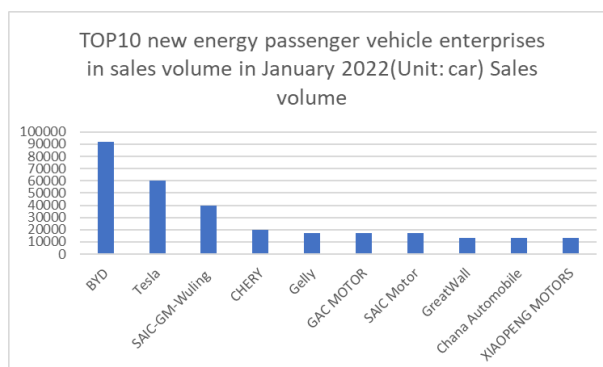
4.1.2 Increase BYD car sales and market share

A tie-up with Toyota could combine complementary skills and industrial chains that BYD would have struggled to develop on its own, and share the fixed costs of developing new products or processes. Toyota's and BYD's new new-energy vehicles, which combine their strengths, will largely be more popular with consumers. It can be clearly seen from the figure1 that BYD's car sales market share has been greatly improved.

Through Figure 1 and Figure 2, it can be seen that from 2017 to 2022, the Chinese passenger car market has changed, and BYD has gone from ranking fifth to ranking first, achieving stage success and becoming the leading passenger car in the new energy sector



Figure 1: Analysis of China's new energy vehicle market in 2017



Source: China Association of Automobile Manufacturers, Qianzhan Industry Research Institute

Figure 2: Analysis of China's new energy vehicle market in 2022

4.1.3 Research and development of new technologies accelerated

Through the multinational strategic alliance with Toyota, BYD can share the financial pressure and risk caused by the failure of research and development with the support of Toyota in capital and technology, so that BYD can concentrate on the research and development of new products, accelerate the launch speed of new products and further improve the quality of products. In 2021, BYD began to bring forth the new, through the launch of DM-i super hybrid technology products and the application of blade battery all-electric models, to accelerate the arrival of the era of parity between new energy vehicles and fuel vehicles, and promote the comprehensive development of electric automobile business. In January 2021, the super hybrid models of DM-i "Qin PLUS DM-i", "Song PLUS DM-i" and "Tang PLUS DM-i" were launched together. These three models received attention and recognition from the market as soon as they were launched, and the demand exceeded supply. In April, the "blade battery" followed the "Han" into BYD Group's fleet of new energy passenger vehicles.^[9] The application of this technology reflects BYD's determination to thoroughly solve the safety pain points of new energy vehicles, and realize the re-upgrading of the safety standards of the whole system, providing consumers with safer driving experience and further enhancing the unique competitiveness of the company's products. The wide application of "blade battery" has also reshaped the industry's understanding of lithium iron phosphate batteries, accelerating the return of lithium iron phosphate batteries to the main power battery circuit. It raises standards across the industry.^[10]

4.2 Analysis of BYD's financial performance after the implementation of the alliance

4.2.1 Long-term performance analysis after merger and acquisition

In this paper, EVA economic value added analysis is used to analyze BYD's long-term performance after the multinational strategic alliance between BYD and Toyota. EVA economic value added analysis is an effective method to analyze the problem of wealth growth.^[11] EVA value is the difference between the return generated by capital input and the invested capital. Since the cost of equity is deducted in his calculation, it reflects the utilization efficiency of the enterprise's capital, so that the performance analysis can be effective.

4.2.1.1 Data selection

From BYD's annual report, the data of nearly three years before and after BYD's multinational strategic alliance with Toyota are selected as the research object, and the financial data of the enterprise from 2018 to 2021 are selected. In order to accurately evaluate the company's business performance, this paper refers to the Interim Measures for Assessing the Business Performance of the Heads of Central Enterprises of State-owned Assets Supervision and Administration Commission. Based on the research results of many scholars and enterprises on EVA, relevant accounting items have been adjusted according to the actual situation of BYD. Since EVA value cannot accurately reflect the range of capital appreciation of an enterprise, the author uses EVA rate of return to explain the value creation ability of an enterprise more comprehensively.^[12] There are many kinds of methods for the determination of average cost of capital rate, such as bond income adjustment, CAPM model and arbitrage pricing model. Because the development of our capital market is not mature enough, the determination of capital cost rate is not universal in our country enterprises. Therefore, for the weighted capital cost ratio, this paper calculates the 5.5% capital cost ratio stipulated by State-owned Assets Supervision and Administration Commission in the Interim Measures.^[13]

4.2.1.2 Calculation formula

The specific calculation formula of EVA economic added value is as follows ^[14]:

EVA Economic value added = Net Operating profit after tax (NOPAT) - weighted average cost of capital (WACC) * total capital (1)

The specific formula for calculating EVA return rate is: EVA return rate = (EVA/total assets) * 100% (2)

Considering the reference of the data, the above formula has been adjusted according to the specific situation of BYD. (3)

Net operating profit after tax (NOPAT) = Total profit + finance expense + R&D expense + asset impairment loss + non-operating expense - non-operating income - investment income - fair value change income -EVA tax adjustment + increase in deferred tax liabilities - increase in deferred tax assets (4)

EVA tax adjustment = (finance expense + R&D expense + asset impairment loss + non-operating expense - non-operating income - investment income - fair value change income) *15%+ income tax expense on the income statement (5)

Total capital = Liabilities + shareholders' equity + deferred tax liabilities - deferred tax assets - construction in progress (6)

Liabilities = Short-term borrowings + non-current liabilities due within one year + long-term borrowings + bonds payable (7)

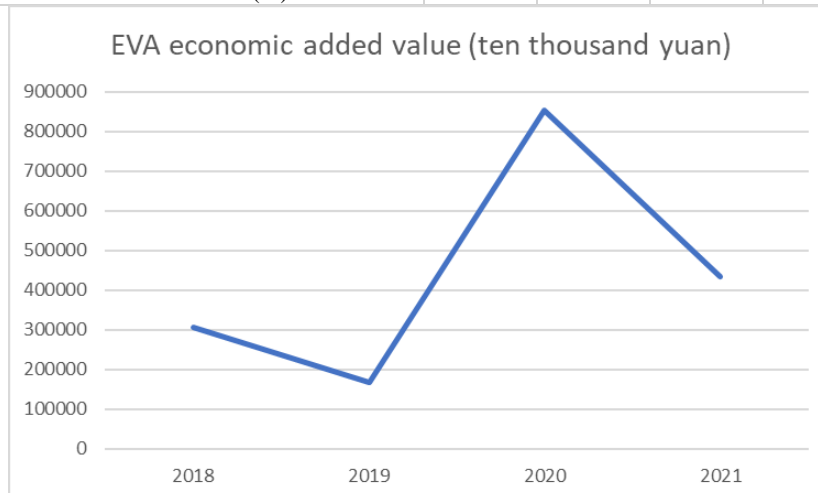
4.2.1.3 Calculation result analysis

Analysis of EVA economic added value:

Through calculation and analysis of BYD's EVA indicators from 2018 to 2021, the results are shown in Table 1:

Table 1: Calculation and analysis of economic added value of BYD EVA from 2018 to 2021

BYD	2018	2019	2020	2021
NOPAT (Ten thousand yuan)	927734.1	863177.4	1462967	1107992
WACC(%)	5.5	5.5	5.5	5.5
Total capital (Ten thousand yuan)	11292916	12646458	11096712	12267187
EVA economic added value (ten thousand yuan)	306623.6	167621.8	852647.8	433296.7
Return on EVA (%)	2.7	1.3	7.6	3.5



Data source, BYD financial report

Figure 3: The variation trend of EVA economic added value

It can be seen from Table 1 and Figure 3 that before the multinational alliance between BYD and Toyota, the economic added value of BYD was always at a relatively low position, but the net operating profit after tax of the enterprise was quite good, indicating that the operating profit created by the enterprise could not offset a large amount of capital costs, so the enterprise did not leave much residual profit to the shareholders. This suggests that BYD needs a partner to share research and development funds with it before entering into an alliance. In 2019, after the alliance between the two parties was reached, BYD's EVA value showed a rising trend, and the company's net operating profit also achieved a large increase in 2020, with which EVA value also had a large increase. In 2021, due to the impact of the epidemic and the changes of the whole market, EVA value has a small floating decline compared with 2020, but it is still in a state of increase compared with 2018 and 2019. Therefore, the multinational strategic alliance between BYD and Toyota has brought the enterprise not small profits, and the expected effect of the alliance is gradually revealed.

EVA ROI analysis:

The variation trend of EVA investment return is shown in Figure 3:

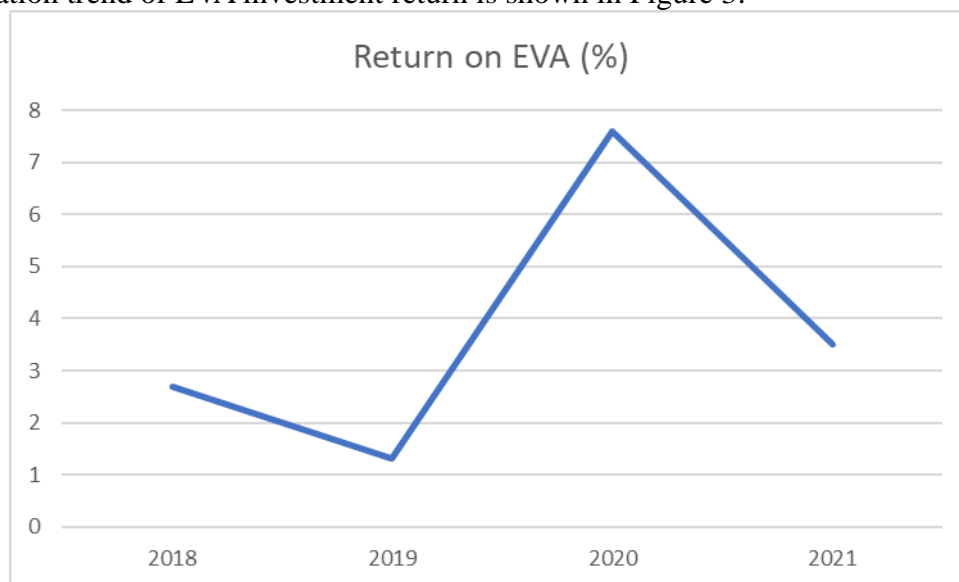


Figure 4: Variation trend of EVA rate of return

As can be seen from the data in Figure 4, EVA return rate in 2018 and 2019 has always been at a relatively low value, which reflects that BYD did not create more value for shareholders before the multinational strategic alliance between BYD and Toyota. After the multinational alliance, BYD's EVA return rate rose rapidly in 2020. The value created is nearly four times that before the merger. Although the EVA return in 2021 is lower than that in 2020, it is also higher than that in 2018.

From the perspective of EVA value and EVA rate of return, BYD's EVA value and EVA rate of return fluctuated from 2018 to 2021, but the overall trend was rising. For the long-term performance of the company, this multinational strategic alliance with Toyota creates significant value for BYD.

4.2.2 Synergy effect analysis

Synergy effect refers to the realization of resource integration of both sides through alliance, merger and acquisition and other activities, so as to achieve "1+1>2" effect in all aspects of enterprise operation, management and finance, and bring greater economic benefits to the enterprise. This paper mainly from the operation of the synergistic effect to expand the analysis.

Operating synergies are mainly analyzed from two aspects: profitability and development ability. The indicators of BYD's profitability and development ability from 2018 to 2021 are shown in Table

2:

Table 2: Indicators of BYD's profitability and development ability from 2018 to 2021

Operating synergies		2018	2019	2020	2021
Profitability indicator	Net interest rate on total assets (%)	1.91	1.09	3.03	1.6
	Return on total assets (%)	18.93	21.3	25.65	18.62
	Basic earnings per share (yuan)	0.93	0.5	1.47	1.06
Development capability index	Revenue growth rate (%)	22.79	-1.78	22.59	38.02
	Net profit growth rate (%)	-27.67	-40.42	183.83	-34.03

As can be seen from Table 2, in terms of profitability, BYD's net interest rate on total assets and return rate on total assets in 2020 both increased compared to previous years, indicating that in the year after BYD and Toyota completed the alliance, the net interest rate on total assets increased rapidly to 3.03%, surpassing the highest level of 1.91% in 2018. The rate of return on total assets also increased to 25.65 percent in 2020. At the same time, earnings per share rose from 0.93 yuan in 2018 to 1.06 yuan in 2021 and peaked at 1.47 yuan in 2020, indicating that the return on investment for shareholders is also getting higher and higher. In terms of enterprise development ability, BYD's operating revenue growth rate (-1.78%) and net profit growth rate (-40.42%) in 2019 both performed poorly. However, after the completion of the alliance, these two indicators have achieved rapid growth in 2020, with the operating revenue growth rate increasing to 22.59%. The growth rate of net profit reached 187.83%, which reached the highest value. In 2021, due to the impact of the epidemic and the overall industry environment, the two indicators declined, but still increased compared with that before the alliance.

The improvement of BYD's profitability and development ability is mainly due to the better operating synergies achieved after the alliance with Toyota. On the one hand, with the help of Toyota's investment, BYD can share a large amount of expenses needed in research and development. Therefore, various profit indicators have been improved to a certain extent. On the other hand, by virtue of Toyota's existing resources, BYD can realize the complementarity of the two sides' resources, further expand its construction scale in new energy vehicles, and improve the utilization efficiency of assets. To sum up, the multinational strategic alliance between BYD and Toyota has improved BYD's profitability and development ability, and the positive benefits brought by the alliance to the enterprise are also increasing.

5. The Inspiration of the Multinational Alliance between Byd and Toyota

5.1 Choose coalition partners carefully

At present, Chinese enterprises choose transnational strategic alliance with foreign enterprises for the purpose of supplementating different technologies to enhance their competitive strength, so as to enter a foreign market at a fast speed and further open the door to the international market. Therefore, in the early stage of the alliance, it is necessary to carry out a general risk assessment on the alliance partners you want to choose. Looking for a trustworthy, good reputation or partner is the key to the success of the alliance between enterprises.

5.2 Establish risk awareness

Forming a strategic alliance with a competitor is actually a very risky act. Once an alliance is formed, the two parties will become a community of common destiny, sharing benefits and risks. Such risks not only exist outside the alliance, but also inside the alliance, such as the risk of technology leakage and the risk of cross-cultural conflict. Due to the existence of numerous risk

factors, enterprises must be careful at all times and never take it lightly at any time. They should learn how to prevent risks and resolve risks in time when risks appear, so that we can calmly deal with crises when they occur.

5.3 Pay attention to the differences in corporate culture

Both sides of a transnational alliance are often faced with cross-cultural conflicts. Conflicts caused by different cultures of enterprises may cause many conflicts between the two sides of the alliance and may even lead to the verge of breakdown of the cooperation. To a large extent, this indicates that the influence of culture on transnational strategic alliances is very significant. Therefore, when selecting the alliance object, we need to pay attention to the cultural differences, and try our best to choose the enterprises with little gap between the cultural backgrounds of the two sides for the alliance. If it is necessary to cooperate with an enterprise with a big cultural gap, the enterprise should learn to communicate and adjust in time when there is a cultural conflict between the two parties, and coexist harmoniously and make progress together on the basis of mutual respect and understanding.

5.4 Focus on active learning from alliances

Transnational strategic alliance itself is a process of mutual learning between enterprises, so in order to succeed in the alliance and achieve the desired effect of both parties, Chinese enterprises must learn to learn from the alliance valuable things for themselves. Through the mutual communication between the personnel in the alliance, the enterprise enables the personnel in the alliance to learn the technology and management mode of the other side of the alliance, and then through the communication between the personnel in the alliance and the internal personnel, the valuable knowledge, technology and management mode of the enterprise can be spread within the entire company. So as to improve their technical level and management ability.

5.5 Focus on post-alliance integration

For the strategic alliance between multinational enterprises, the integration between them is very important after the alliance is formed, which determines the success of the alliance to a large extent. Before the alliance, the integration between the two enterprises was a very difficult task due to the differences in organizational structure, management style, culture and other aspects. The good and bad of integration is related to whether the synergistic effect between them can play a role. A good strategic alliance produces huge synergies, which can benefit enterprises to a large extent. Choose a management mode and organizational structure acceptable to both sides, promote the alliance structure to a higher level, enhance the cohesion within the alliance, let both sides become comrades in the same trench, advance and retreat together.

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