A Case Study of Baidu's Wholly-owned Acquisition of xPerception

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**Keywords:** Baidu Inc. Cross-border Mergers and Acquisitions, XPerception Company, Merger and Acquisition Motivation, Merger and Acquisition Risk, Merger and Acquisition Process, Mergers and Acquisitions Performance.

**Abstract.** With the development of economic globalization, more and more enterprises in the world begin to adopt cross-border m&a as their main means of international operation. On April 13, 2017, Baidu wholly-owned xPerception, an American artificial intelligence company, to further strengthen its hardware and software capabilities in the field of visual perception, enabling AR, autonomous driving and other core businesses, which is an important step to speed up the productization of artificial intelligence technology. The acquisition is mainly for Baidu to accelerate the industrialization of ARTIFICIAL intelligence business matrix including AR, autonomous driving and robot, and gain strategic resources and other advantages, but at the same time, it also faces many risks in capital and culture. Based on baidu company wholly owned buying American "xPerception" as an example, from the company of the current situation and existing problems of transnational merger and acquisition, respectively introduces the acquirers company and acquired American company "xPerception" an overview of the artificial intelligence, and then analyzes the reason of the acquisition and risk, and finally summarizes the result of the acquisition, has carried on the corresponding summary to acquisition, evaluation and reflection, aims to provide reference for other enterprises transnational mergers and acquisitions in the future.

1. **Introduction**

With the deepening and development of global economic globalization and integration, more and more companies choose to participate in market competition through transnational mergers and acquisitions in order to gain competitive advantages. Not to be outdone, many Chinese companies have jumped on the bandwagon. In the face of fierce international competition in the market, a large number of Chinese enterprises transnational m&a to integrate talent, technology, resource and market, from the domestic enterprises to international companies across, thus greatly improve the Chinese enterprises in international status and competitive power, but due to the diversity and pattern diversity in the international market, the risk of cross-border m&a and difficulty also rose.

On April 13, 2017, baidu company buying American AI "xPerception", the core technology for machine vision technology companies and talent acquisition, shows that baidu layout in the field of artificial intelligence is becoming more flexible, with advanced technology and top talent of silicon valley companies has become a complementary matrix of baidu AI and the technology of ecological important elements. However, while seeing that m&a injects new impetus to enterprises, the risks of capital culture and other aspects brought by M&A should not be ignored, so it is particularly important to pay attention to the integration of enterprises after M&A.
2. Analysis of the Case of Baidu's Wholly-owned Acquisition of the American Company "xPerception"

2.1. Introduction of Baidu Inc

Baidu is the world's largest Chinese search engine and the largest Chinese website, ranking among the world's leading intelligent enterprises. On January 1, 2000, Baidu was founded in Zhongguancun. The patented "hyperlink analysis" technology owned by its founder, Robin Li, enabled China to occupy a position in the core technology field of independent search engine in addition to the United States, Russia and South Korea. [1]

2.2. Introduction of xPerception Company

As a high-tech enterprise, xPerception is mainly engaged in the design and production of machine vision software and hardware solutions. In the fields of robot, AR/VR, intelligent guide, etc., it provides customers with machine vision hardware and software products centering on 3d inertial camera equipment. From the perspective of acquisition, Baidu has great interest in acquiring or acquiring visual software and hardware technologies of xPerception, and intends to acquire this core technology of xPerception, so that Baidu can obtain corresponding cooperative supplement in AR, autonomous driving and other fields. [2]

2.3. Acquisition Motivation

An enterprise is a kind of capital organization whose biggest purpose is to realize capital appreciation. The essence of M&A among enterprises is an investment activity. The main reason for M&A is the pursuit of capital appreciation. [3] It may also be driven by the pressure caused by the competitive situation. However, in terms of its M&A behavior, in real life, different forms of M&A motivation are different, so enterprises should focus on their own strategic development goals to make a clear analysis of their M&A motivation.

The acquisition of xPerception by Baidu is generally considered to be the acquisition of Baidu in order to make a breakthrough in the software and hardware capabilities of visual perception, so as to better equip baidu for its core business such as AR and automatic driving, and thus achieve leap-forward development in artificial intelligence technology products.

3. Risk Analysis of M&A

Although the merger has brought considerable beneficial impact to Baidu, it also has a considerable number of risks, including the strategic planning risk before the merger, the financial risk during the merger, and the integration risk after the merger.

3.1. Strategic Planning Risks before MERGER and Acquisition

Transnational M&A is a strategic organizational behavior of a company. The first step is to formulate m&a strategy, which is directly related to the success of M&A. [4] If the future strategic decisions in the company, baidu, lack of physical development policy decision makers to its competitive advantage cannot fully grasp, not to the external development environment, but the excessive attention to short-term financial interests, lack of long-term strategic targets, and not formed between with the target enterprise on business, just blindly follow the trend development of industry, so will lead to excessive diversification, affect the advantage industry, go against baidu the reasonable business in the future.
3.2. Financial Risks in Mergers and Acquisitions

Due to the difference of exchange rate and the strength gap between enterprises, Chinese enterprises need to have a large amount of funds for cross-border mergers and acquisitions. Although Baidu has strong strength, the acquisition fund is still not a small amount for Baidu. Therefore, the increase in loan interest due to the large amount of acquisition fund payment also adds new pressure to Baidu. Since Chinese enterprises generally adopt external financing to conduct cross-border M&A, Baidu also chooses external financing to obtain m&a funds. However, due to the late start of China's financial market and the gradual formation of the market system, Baidu also faces certain financial risks.

3.3. Integration Risks after M&A

Without timely integration after merger and acquisition, enterprises will face a series of management risks, which mainly include risks in operation, management, culture and talent. In terms of the company's operation and management, if Baidu fails to formulate in time the development strategy after the merger and still adopts the pre-merger business strategy, it will not be able to achieve the optimal allocation of enterprise resources, which will be detrimental to the long-term development of the enterprise. In terms of culture, as we all know, although the world globalization is more and more quickly, but to a certain extent, the culture of China and the United States there is a very big difference, if the enterprise is unable to narrow the differences in time, to seek common values to the two countries culture, the enterprise after the merger will into values caused by cultural differences, this is not conducive to enterprise culture, also will not be able to better implement the strategy of "going out". In terms of talent, Baidu's acquisition of xPerception also faces the problem of retention of old and new employees. If the talent mechanism strategy cannot be adjusted in time, the remaining old employees will lose their enthusiasm for work, and the new employees will not be able to find their positions in time. In the end, employees may not be able to perform their respective duties and help the company achieve long-term development.

4. Merger and Acquisition Operation

For Baidu, overseas merger and acquisition is also a more complex foreign investment activity, which has a large investment risk. Therefore, Baidu company before the implementation of the merger and acquisition, to develop a thorough merger and acquisition operation plan and plan. Merger and acquisition operation usually includes two aspects of operation, one is entity operation, the other is capital operation. The so-called entity operation refers to the internal arrangement made by the acquirer during the implementation of foreign mergers and acquisitions. The so-called capital operation refers to the sources of funds needed for the merger and acquisition, the risk of exchange rate and other factors.

4.1. Entity Operation

Before Baidu acquired the American company "xPerception", Baidu had made a detailed operation plan of acquisition. First, the subject of merger and acquisition and the method of capital payment are clarified. Secondly, the plan of acquisition by means of equity is formulated. Third, the implementation of the merger and acquisition time, progress and safeguard measures have been detailed planning.
4.1.1. Merger and Acquisition Method

Merger and acquisition usually includes two ways: one is equity acquisition, the other is asset acquisition. Equity acquisition is usually applied to the acquisition of all equity or the acquisition of the target situation; Asset acquisition is usually used to acquire some or all of the assets of the acquired company.

According to the detailed investigation, the financial data provided by xPerception was relatively complete and was a wholly-owned acquisition, so it adopted the equity acquisition method.

4.1.2. Merger Plan and Schedule

In total, Baidu invested $30 million to acquire all shares of xPerception and an additional $10 million to pay expenses incurred in the acquisition and to supplement the company's working capital. In the next year, the company intends to invest an additional $1,500 in xPerception to increase its size.

Baidu made a detailed plan for the acquisition of xPerception: It planned to conduct on-site due diligence from October 8, 2016 to December 31, 2016, and to form a written Due Diligence Report; Before January 15, 2017, the company discussed the acquisition with xPerception and formed the Master Acquisition Agreement in writing; Submit the materials to the examination and approval department before February 28, 2017; The examination and approval shall be completed before March 15, 2017; April 13, 2017 shall be the base date for the asset evaluation and audit of the transaction project; June 30, 2017 shall be the effective date for the transaction; and the project shall be officially closed on July 31, 2017.

4.2. Capital Operation

When Baidu makes delivery of xPerception, it shall first reach agreement between the acquirer and the acquiree, and then obtain the approval of the GOVERNMENT departments of the United States and China. After the above procedures are reformed, the commercial bank can remit the payment to the designated account. In order to complete the capital expenditure of merger and acquisition and prepare for the work, Baidu submitted an application for merger and acquisition to the government department. After the government department approved the application for merger and acquisition, it conducted a due diligence investigation of xPerception, an American company, with professional staff in full charge. Finally, a written due diligence report and a feasible research report were formed. After the feasibility study report was approved, Baidu formally issued a letter of intent to acquire xPerception. After the letter of intent was approved by the U.S. Department of Commerce and other departments, Baidu paid $3,000 to xPerception for the acquisition. Upon completion of the merger, Baidu Shall apply to the Ministry of Commerce for filing.

5. Performance Analysis of M&A

The key to the success of a merger lies in the success of the post-merger integration stage. It has been nearly two and a half years since Baidu acquired xPerception on April 13, 2017. This paper analyzes the acquisition effect of xPerception from four aspects, namely, management effect, operation effect, financial effect and intangible asset effect, and proves that it is a successful acquisition from the perspective of performance.
5.1. Management Effect
On the one hand, xPerception suffered losses for two consecutive years, the reason of which was that it intended to make profits in the future, so as to integrate resources and reshape assets. For example, the management accelerated the exercise of options, and significantly increased non-cash equity incentive fees. From this point of view, The management ability of Baidu company is not very deficient. On the other hand, xPerception has cooperated with other companies in the same industry, so it can be seen that its management team is quite excellent. M&a happens, therefore, the baidu through the talent localization strategy, by the chairman and CEO xPerception continues to manage xPerception, it formed a comforting effect to some extent, is conducive to the absorption of advanced management experience for reference, promote the effective management of overseas business, make management costs have been reduced, enhance its efficiency of management, which helps to increase after the merger integration effect.

5.2. Business Effect
5.2.1. Expansion of Enterprise Asset Scale and Increase of Income
Table 1. Comparison of financial indicators between baidu in 2015 and 2016 unit: 100 million YUAN.

<table>
<thead>
<tr>
<th></th>
<th>Total assets</th>
<th>operating income</th>
<th>net profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>1820</td>
<td>705.50</td>
<td>116.30</td>
</tr>
<tr>
<td>2017</td>
<td>2517</td>
<td>848.10</td>
<td>183</td>
</tr>
<tr>
<td>2018</td>
<td>2976</td>
<td>1023</td>
<td>275.70</td>
</tr>
</tbody>
</table>

Data source: Oriental Fortune net

As shown in Table 1, after the merger, the total assets of Baidu grew rapidly, with the total assets increasing by 64% compared with that of 2016. Operating income and net profit also showed a large increase in the trend. In 2017, the company realized revenue of about 10 billion yuan, a 45.00% increase from the same period last year. After the merger, Baidu's total revenue grew about 23% from 2016. [6]

5.2.2. Contribute to the Completion of Industrial Chain Layout
In November 2012, baidu announced its decision to acquire iQIYI shares held by its us parent company, providence equity capital. It is understood that the amount of acquisition is roughly between 350 million yuan and 400 million yuan. After the acquisition, iQIYI and PPS continue to operate under the dual-brand model, while moderately integrating the back office system. Then in 2013, Baidu acquired 91 Wireless of the United States. Through a series of overseas mergers and acquisitions, Baidu has further improved its Internet system, acquired a large number of high-quality IP resources, and realized the unlimited expansion of its business sector. In particular, it has achieved a profound layout improvement in the engine industry chain. From the perspective of the future development trend of the ARTIFICIAL intelligence market, the successful acquisition of xPerception will help Baidu continue to improve the income of artificial intelligence. Meanwhile, the revenue structure of robots and AR/VR and intelligent guide will be adjusted soon to make up for the deficiencies of innovative robots and AR/VR. With the potential of XPerception, in the overall game industry, there will be 50% or more of the proportion is mobile game. It would also
help Baidu expand internationally and compensate for the potential risks of relying solely on the Chinese market. From the perspective of XPerception, it also has a lot of positive effects. At present, The United States and Europe are Supercell's best-selling markets, and a strong backing from Baidu would be conducive to Supercell's considerable revenue in China.

5.3. Financial Effect

5.3.1. Operating Capacity

Table 2. Comparison of Baidu's operating income from 2016 to 2018.

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>total assets (billion yuan)</td>
<td>1820</td>
<td>2517</td>
<td>2976</td>
</tr>
<tr>
<td>Year-on-year growth (100 million yuan)</td>
<td>-</td>
<td>38.29%</td>
<td>18.23%</td>
</tr>
<tr>
<td>Operating revenue (billion yuan)</td>
<td>705.50</td>
<td>848.10</td>
<td>1023</td>
</tr>
<tr>
<td>Year-on-year growth rate (%)</td>
<td>-</td>
<td>20.21%</td>
<td>20.62%</td>
</tr>
</tbody>
</table>

Data source: Oriental Fortune net

As can be seen from Table 2, the total assets of Baidu have grown rapidly, reaching 297.6 billion yuan in 2018. The operating revenue increased from 70.55 billion yuan in 2016 to 102.3 billion yuan in 2018, with a growth rate of more than 10 percent for the third consecutive year. Although the acquisition of xPerception cost more dollars in 2017, after the acquisition, the revenue growth rate was still 20.21%. In 2017, the asset growth accelerated, and the revenue growth was faster than that of the previous year with stable development, indicating that the whole acquisition was relatively successful and the operating state of Baidu maintained a good development trend.

Table 3. Operating capacity indicators of Baidu from 2015 to 2018.

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounts receivable turnover rate (times)</td>
<td>17.56</td>
<td>19.54</td>
<td>19.32</td>
</tr>
<tr>
<td>Inventory turnover rate</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total asset turnover (times)</td>
<td>0.43</td>
<td>0.39</td>
<td>0.37</td>
</tr>
<tr>
<td>Receivable turnover days (days)</td>
<td>20.50</td>
<td>18.42</td>
<td>18.63</td>
</tr>
<tr>
<td>Inventory turnover days</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total assets turnover days (days)</td>
<td>841.59</td>
<td>920.54</td>
<td>966.72</td>
</tr>
</tbody>
</table>

Data source: Oriental Fortune net
It can be seen from the data analysis in Table 3 that the turnover rate of Accounts receivable of Baidu in 2016 was 17.56 times and 19.54 times respectively in 2017, which increased by 1.98 times compared with that in 2016. 19.32 times in 2018, 0.22 times lower than that in 2017, which is not a big drop. The turnover rate of total assets of Baidu was 0.43 times in 2016 and 0.39 times in 2017, which decreased by 0.04 times compared with that in 2016. In 2018, it was 0.37 times, and in 2018, it was 0.02 times lower than that in 2017, which is not a big drop. Generally speaking, the receivable turnover showed an upward trend, while the total asset turnover showed a slight downward trend. In general, continuous mergers and acquisitions of enterprises are of some help to the operation capacity of enterprises, but in the process of mergers and acquisitions, enterprises should still pay attention to asset management to improve their asset operation capacity.

5.3.2. Profitability

Table 4. Assets and profits of Baidu From 2016 to 2018.

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total assets</td>
<td>1820</td>
<td>2517</td>
<td>2976</td>
</tr>
<tr>
<td>Liabilities</td>
<td>842.50</td>
<td>1214</td>
<td>1218</td>
</tr>
<tr>
<td>Asset-liability</td>
<td>46.29</td>
<td>48.21</td>
<td>40.94</td>
</tr>
</tbody>
</table>

Data source: Oriental Fortune net

According to Table 4, we can see that the assets of Baidu are gradually rising after the merger. The company's assets rose from 182 billion yuan in 2016 to 251.7 billion yuan in 2017. By December 31, 2018, the total assets had risen to 297.6 billion yuan, indicating a significant increase in the enterprise value. The company's asset-liability ratio dropped from 46.29% in 2016 to 40.94% in 2018. In terms of long-term solvency data, Baidu's asset-liability ratio has been fluctuating around 45%, staying within a moderate range and not reducing long-term solvency risk due to continuous merger and acquisition activities. This indicates that Baidu's financial cost has been reduced in the past three years, its debt paying ability is good, and its operation is also very stable.

Table 5. Profitability indicators of Baidu from 2016 to 2018.

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross profit</td>
<td>352.70</td>
<td>417.50</td>
<td>505.30</td>
</tr>
<tr>
<td>Basic eps</td>
<td>31.95</td>
<td>52.75</td>
<td>78.64</td>
</tr>
<tr>
<td>Gross profit margin</td>
<td>50%</td>
<td>49.22%</td>
<td>49.91%</td>
</tr>
<tr>
<td>Net profit margin on sales</td>
<td>16.44%</td>
<td>21.56%</td>
<td>22.08%</td>
</tr>
</tbody>
</table>

Data source: Oriental Fortune net

As can be seen from the data analysis in Table 5, the gross profit of Baidu was 35.270 billion
yuan in 2016 and 41.75 billion yuan in 2017, with an increase of 18.37%. 50.53 billion yuan in 2018, up 21.02% from 2017; Baidu's basic eps was 31.95 in 2016 and 52.75 in 2017, with an increase of 65.10%. 78.64 in 2018, up 49.08% from 2017;

Baidu's gross profit margin of sales is 50% in 2016 and 49.22% in 2017, decreasing by 0.78 percentage points compared with 2016 in 2017. 49.94% in 2018, up 0.69 percentage points from 2017; Net profit rate of sales of Baidu increased by 16.44% in 2016 and 21.56% in 2017, and by 5.12 percentage points in 2017 compared with 2016. 22.08% in 2018, up 0.52 percentage points from 2017; Overall, Baidu's profitability is on the rise. The total assets and net assets are greatly increased, and the growth rate of net profit is far larger, so the two major indicators of asset income are on the rise. But on the whole, the ability of enterprises to bring profits to shareholders is good and the profit level is high.

6. Enlightenment and Reflection Brought by M&A Activities

As the largest acquisition of overseas machine vision hardware and software products by Chinese enterprises, Baidu's acquisition of xPerception is an epitaxy expansion mode and a practical implementation of the slogan of "going global", which opens the prelude to the expansion and development of China's private enterprises' market share.

6.1. Expand Financing Channels and Improve Financing Capacity

Due to the single financing mode in China, high risk is the main reason for the failure of cross-border M&A in China. Only when the financing mode is suitable for the actual development of enterprises, the risk of cross-border M&A can be effectively avoided. Therefore, focus on leveraging the power of investment Banks to act as "financial advisers" for successful mergers and acquisitions and provide support in terms of short-term funding capacity. At the same time, financing can be obtained by acquiring listed companies in foreign capital markets, so as to make full use of local funds, save capital cost and provide a prerequisite for enterprise expansion.

6.2. Vigorously Excavate and Cultivate Transnational Management Talents

Transnational mergers and acquisitions of enterprises are complicated and meticulous, and they need to sort and collect relevant information, evaluate assets, complete internal and external financing, obtain legal confirmation and so on. These businesses are highly professional, and it is difficult to gather effectively in a merger and acquisition scheme. Value China is short of elite talents in international trade, investment and financing, so it is difficult for Chinese enterprises to carry out cross-border MERGERS and acquisitions by themselves. In most cases, they need the cooperation of high-quality foreign intermediary institutions. Therefore, China should attract a large number of foreign-related talents, integrate global talent resources, and realize localized development and cultivation of foreign talents. In addition, we should create opportunities for outstanding Chinese talents to learn and practice in developed countries, bring advanced technology and management experience from abroad back to China, and provide impetus for the sustainable and large-scale development of Chinese enterprises.

7. Conclusions

Baidu m&a xPerception as at present, China's largest Chinese enterprises overseas m&a robots, from mergers and acquisitions to now has been support and questions constantly, some people think
that baidu this acquisition is open more overseas market, wise, also some people think that high value acquisition xPerception really worth, will not face losses in business in the future or technical problems, such as depreciation. We cannot generalize at present, the future development of Baidu depends on its business strategy and leadership in the future. In short, it has yet to be tested by the market. However, as far as The current operating situation of Baidu is concerned, the merger and integration situation is good, which can be called a successful merger and acquisition.

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