

## Research on Synergy Effect Based on Value Creation Efficiency

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**Abstract:** The motivation and purpose of merger and acquisition (hereinafter referred to as M&A) of synergistic enterprises are also an important basis for measuring their success of M&A. Through M&A, Sunwave, a high-tech enterprise, has improved its operating situation, enhanced its own value and created benefits. Based on Economic Value Added (hereinafter referred to as EVA) and EVA momentum, this paper analyses Sunwave's M&A, and finds that it has achieved synergy effect in asset allocation efficiency and growth capacity in terms of production and operation efficiency (hereinafter referred to as POE) and market profit efficiency (hereinafter referred to as MPE). Meanwhile, it is insufficient in production management efficiency and profitability.

### 1. Introduction

Since 2015, with the new round of China's stock market boom, M&A has entered a hot stage. In 2020, China's M&A market completed 3,770 M&A, with a total transaction value of 1.6 trillion yuan. It can be seen that China's M&A market has a large number of M&A and large transaction amount. However, many enterprises have experienced declines in performance or even large losses after M&A, failing to form a good synergy effect. This paper selects Sunwave's M&A of Juwang Technology as a case to study the M&A synergy effect concerning the value creation efficiency, so as to provide some suggestions for the M&A of China's listed enterprises.

### 2. Brief Introduction of EVA Momentum

EVA refers to the residual revenue after deducting costs from capital gains, which can evaluate the ability to use capital and create value. However, it ignores the efficiency of enterprise value creation. The larger the scale and revenue of the enterprise, the higher the EVA. EVA momentum inherits the advantage that EVA can measure the actual value creation of an enterprise, makes up for the problem that EVA index is affected by the investment scale, and can analyse the enterprise operation through further decomposition.

The calculation formula of EVA is as follows:

$$EVA = NOPAT - WACC \times IC \quad (1)$$

The calculation formula of EVA momentum is as follows:

$$EVA \text{ momentum} = \frac{\Delta EVA}{\text{Sales revenue of the previous period}} \quad (2)$$

$$EVA \text{ momentum} = \Delta \left( \frac{EVA}{\text{Operating revenue}} \right) + \left( \frac{EVA}{\text{Operating revenue}} \right) \times \text{Revenue Growth rate} \quad (3)$$

This paper calculates Sunwave's EVA momentum to reflect the change of value creation efficiency before and after M&A, and decomposes EVA momentum. It analyzes the M&A synergy effect from aspects of POE and MPE.

### 3. Case Analysis

### 3.1. Company Profile

Established in 1993, Sunwave is a communications equipment supplier integrating R&D, production, sales and engineering services, which is a national key high-tech enterprise. In 2017, it completed M&A and entered the field of Internet, forming a dual main business model of communication equipment manufacturing and Internet. After M&A, its EVA momentum has increased significantly and formed a obvious synergy effect.

### 3.2. EVA Momentum Calculation and Analysis

#### 3.2.1. EVA Calculation and Analysis

The current EVA represents the total value created by the enterprise. The EVA calculation of Sunwave from 2015 to 2019 is shown in Table 1.

**Table 1.** EVA Calculation and Analysis (unit: million yuan)

Items	2015	2016	2017	2018	2019
NOPAT	286.48	207.60	272.07	518.88	465.16
IC	1430.02	1586.29	2921.64	3797.91	3859.71
WACC	9.31%	6.77%	5.45%	6.20%	5.76%
EVA	153.30	100.16	112.79	283.60	242.91

Source: calculated according to Sunwave annual report data

From 2015 to 2016, Sunwave's EVA was greater than zero, but there was a downward trend. Compared with 2014, the invested capital in 2016 increased by 11%, but EVA decreased by 34.67%. In the year of M&A, its EVA gained growth. In 2018, Sunwave further expanded its investment, and the NOPAT increased by 90.72%, making its EVA increased by 151.44% compared with 2017. In 2019, Sunwave's EVA was 240 million yuan, which was lower than in 2018, but it still performed well. After M&A, its EVA was significantly higher than before, which indicated that it has enhanced its value creation capabilities through M&A and achieved obvious synergy effect.

#### 3.2.2. EVA Momentum Calculation and Analysis

EVA momentum can be decomposed into POE and MPE, and enterprises should make decisions by weighing the two. The EVA momentum calculation of Sunwave is shown in Table 2.

**Table 2.** EVA Momentum Calculation and Decomposition

ITEMS	2015	2016	2017	2018	2019
EVA momentum	-3.39%	-6.14%	1.28%	14.46%	-1.14%
POE	-2.62%	-7.59%	-0.58%	-1.57%	-3.61%
MPE	-0.78%	1.45%	1.86%	16.02%	2.47%

Source: calculated according to Sunwave annual report data

EVA momentum of Sunwave in 2015 and 2016 were -3.39% and -6.14% respectively, both less than 0 in two years, which indicated that its value creation efficiency was decline. By the end of 2017, its EVA momentum was 1.28%, which indicated that its value creation efficiency was higher than that of the previous year. In 2018, its EVA momentum reached 14.46%, which was significantly higher than that in 2017. EVA momentum in 2019 was -1.14%, with a decline in value creation efficiency compared to 2018, mainly due to a decline in EVA compared to 2018, but the performance was still higher than before M&A. It can be found that the value creation efficiency of Sunwave after M&A is significantly improved, producing a synergy effect.

### 3.3. Analysis of Production and Operation Efficiency

Only when enterprises allocate resources reasonably and generate economic benefits, can they improve their POE. The POE of Sunwave from 2015 to 2019 is shown in Table 3.

**Table 3.** Analysis on the Change of POE

Items	2015	2016	2017	2018	2019
POE	-2.62%	-7.59%	-0.58%	-1.57%	-3.61%
The impact of asset allocation	Up	Up	Down	Up	Up
The impact of operation management	Down	Up	Up	Down	Down

Source: calculated according to Sunwave annual report data

Sunwave's production and operation efficiency was in a downward trend from 2015 to 2016, and it was greatly improved in the year of M&A. From 2018 to 2019 after M&A, its production and operation efficiency declined again. Generally speaking, the overall fluctuations were large, and the market operation efficiency after M&A was all negative. It can be concluded that market operation efficiency does not have a positive effect on value creation efficiency. Namely, there is no obvious synergy effect in production and operation. Production and operation efficiency is mainly determined by asset allocation efficiency and operation management efficiency. This paper further analyzes production and operation efficiency from these two aspects.

### 3.3.1. Analysis of Asset Allocation Efficiency

The asset allocation efficiency can measure the effective degree of invested capital, which is reflected by the matching degree of invested capital and operating revenue.

**Table 4.** Analysis of Asset Allocation Efficiency (unit: million yuan)

Items	2015	2016	2017	2018	2019
Invested capital	1430.02	1586.29	2921.64	3797.91	3859.71
Operating revenue	865.02	988.76	1181.44	3553.61	5558.89
Growth rate of invested capital	-10.13%	10.93%	84.18%	29.99%	1.63%
Growth rate of operating revenue	-4.37%	14.31%	19.49%	200.79%	56.43%
Impact on production and operation efficiency	Up	Up	Up	Up	Up

Source: calculated according to Sunwave annual report data

As shown in Table 4, the growth rate of Sunwave's operating revenue was fluctuating before M&A. In 2015 and 2016, asset allocation efficiency had a certain improvement effect on production and operation, but in 2017, it had a significant inhibiting effect on production and operation. In 2018 and 2019 after M&A, the growth rate of operating revenue was much higher than that of invested capital. This shows that the asset allocation efficiency has been greatly improved, which can improve the efficiency of production and operation.

From the data analysis, Sunwave's improvement in asset allocation efficiency is mainly due to its actively updating business portfolio, improving efficiency, getting away from low-return businesses, like microwave wireless devices and network optimization equipment, etc. It concentrates resources on high-yield projects, like communication equipment manufacturing, satellite communications, Internet advertising and We Media, which improves operating efficiency and resource return. Its return on equity did not exceed 3% from 2015 to 2017, but reached 9.06% and 6.33% respectively in 2018 and 2019 after M&A.

### 3.3.2. Analysis of Operation Management Efficiency

The operation and management efficiency mainly shows the matching of the growth rate of revenue and cost. If the growth rate of operating revenue is greater than that of cost, it shows that the enterprise has improved the operation and management efficiency.

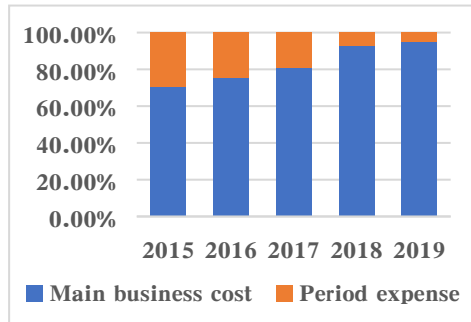
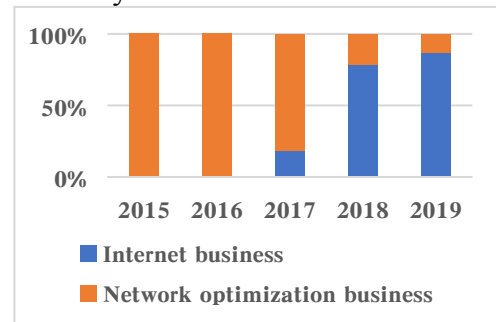
**Table 5.** Analysis of Operating Revenue and Cost (unit: million yuan)

Items	2015	2016	2017	2018	2019
Cost	852.60	962.73	1,075.01	3296.33	5311.15
Growth rate of cost	-2.51%	12.92%	11.66%	206.63%	61.12%
Growth rate of revenue	-4.37%	14.31%	19.49%	200.79%	56.43%
Impact on POE	Down	Up	Up	Down	Down

Source: calculated according to Sunwave annual report data

As shown in Table 5, the cost of Sunwave from 2015 to the end of 2017 roughly matched the growth trend of operating revenue. The overall growth rate of cost is lower than that of operating revenue, which has a positive effect on the operation management efficiency. From 2018 to 2019, the growth rates of cost were 206.63% and 61.12% respectively, and the growth rates of operating revenue were 200.79% and 56.43%. The former was higher than that of the latter, which shows that the growth of cost does not bring about the corresponding growth of revenue. Namely, Sunwave's operation management efficiency has not achieved synergy effect.

As shown in Fig. 1, after M&A, Sunwave's main business cost accounted for a significant increase in total cost. Besides, as shown in Fig. 2, after M&A, the cost of its Internet business accounted for more than 70% of the total cost. Thus, the increase in its cost is mainly caused by the increase in operating cost of Internet. According to the financial analysis, the cost increase is mainly the increase in advertising and public number business. The total operating costs of these two businesses in 2018 and 2019 were 2.37 billion yuan and 4.31 billion yuan.

**Fig. 1.** Cost structure**Fig. 2.** Business cost comparison

The main reasons for the mismatch between cost and operating revenue growth after the emergence of Sunwave's Internet business are as follows. Firstly, this M&A is a diversified one, and it itself has no Internet business foundation. After M&A, it is unable to form scale effect in the Internet field, unable to form a strong bargaining power over upstream and downstream enterprises, and its cost is more seriously affected by market fluctuations. Since 2018, the cost of domestic Internet channel traffic has risen, leading to a price war in the industry, which has led to a surge in costs. Secondly, after M&A, Sunwave failed to reorganize the management of its subsidiaries and did not effectively optimize the supply chain and cost control.

### 3.4. Market Profit Efficiency

The market profit efficiency mainly reflects the profitability of enterprises and the growth of market share. Sunwave's market profit efficiency is shown in Table 6.

**Table 6.** Analysis of MPE

Items	2015	2016	2017	2018	2019
MPE	-0.78%	1.45%	1.86%	16.02%	2.47%
EVA/Operating revenue	17.72%	10.13%	9.55%	7.98%	4.37%
Impact on MPE	Down	Down	Down	Down	Down
Growth rate of operating revenue	-4.37%	14.31%	19.49%	200.79%	56.43%
Impact on MPE	Down	Up	Up	Up	Down

Source: calculated according to Sunwave annual report data

Sunwave's market profit efficiency from 2015 to 2017 was -0.78%, 1.45% and 1.86% respectively. After M&A, it was 16.06% in 2018 and 2.47% in 2019, which were generally higher than those before M&A. It can be seen that Sunwave has improved the market profit efficiency after M&A, which shows that it has achieved synergy effect in the market profit efficiency.

### 3.4.1. Profitability Analysis

Both gross profit rate and net profit rate reflect the profitability of an enterprise. The gross and net profit rates of Sunwave are shown in Table 7.

**Table 7.** SunWave Profitability Analysis

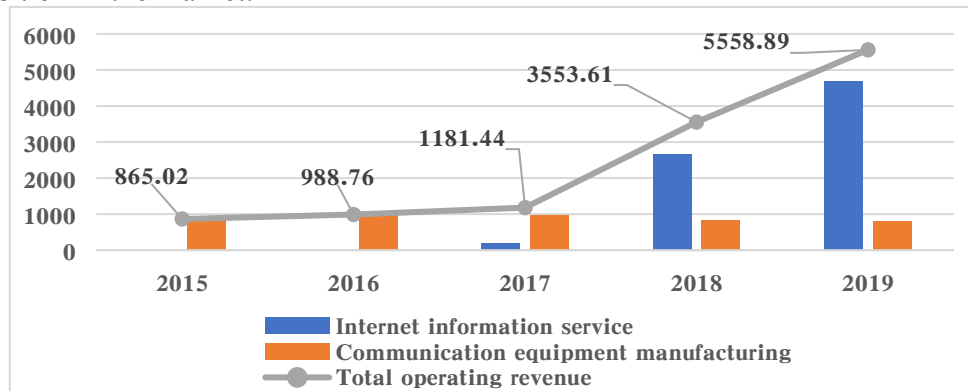
Items	2015	2016	2017	2018	2019
Gross profit rate	29.32%	25.91%	25.53%	13.34%	8.93%
Communication	29.32%	25.91%	28.49%	22.76%	19.80%
Internet	12.52%	11.42%	8.39%	4.46%	3.90%
Net profit	18.99	27.60	47.27	214.71	158.56

Source: calculated according to Sunwave annual report data

Before M&A, Sunwave's gross profit rate was higher than 26%. After M&A, its gross profit rate was 13.84% in 2018 and 9.23% in 2019, respectively, resulting in a significant decline. From the analysis of financial statements, it can be seen that the gross profit rates of communication and We Media remain stable, while the decline lies in the Internet advertising business. In recent years, the competition situation in the Internet advertising industry and the market price war have become increasingly fierce, which lead to a sharp decrease in the gross profit rate of advertising. Besides, because the main advertising customers are the leading domestic Internet enterprises, the company does not have strong bargaining power in such a market environment. The combination of the two factors makes Sunwave's profitability decline.

### 3.4.2. Analysis of Growth Ability

The growth ability of EVA momentum refers to the growth of operating revenue and the change of market position in the market.



**Fig. 3.** SunWave revenue Growth

Sunwave's operating revenue has increased significantly after M&A. From 2018 to 2019, the growth rate of operating revenue reached 200.79% and 56.43% respectively, mainly due to the increase of Internet advertising. On the one hand, this is because Juwang Technology has obtained great financial support from the parent company after M&A, which enables its Internet business to continuously expand investment, fully play its first-mover advantage in the industry, and rapidly expand the market. On the other hand, Sunwave has long served domestic telecom operators, accumulated great channel resources in the field of communication, and provided many basic scenarios for the integration of online and offline Internet information services. This improves the operation scale and comprehensive competitiveness of Internet business, and makes Internet information service obtain a large number of new customers.

## **4. Conclusion and Enlightenment**

### **4.1. Conclusion**

#### **4.1.1. Production and Operation**

Through M&A, Sunwave has entered into a new field and implemented a correct business layout, which has greatly improved its asset allocation efficiency. However, due to the high cost of new Internet business, its operation management efficiency is not high. The above has made Sunwave not achieve synergy effect in production and operation efficiency after M&A.

#### **4.1.2. Market Profit Efficiency**

After M&A, its gross profit rate has declined significantly, resulting in the decline of its overall profitability. However, its net profit increased rapidly, and the rapid expansion of its Internet business makes its growth capacity at a high level. As a result, Sunwave's market operating efficiency is positive, which improves its EVA momentum and achieves obvious synergy effect.

### **4.2. Enlightenment**

#### **4.2.1. Reasonably Selecting M&A Objects and Improving Asset Allocation Efficiency**

Enterprises should select targets carefully and reasonably according to the strategic policies, and M&A motivation should be consistent with the strategic goals. After that, it is necessary to clarify development focus, optimize the industrial structure, appropriately simplify business, focus on advantageous industries, and improve asset allocation efficiency.

#### **4.2.2. Strengthening Internal Management and Improving Operation Management Efficiency**

Enterprises should focus on internal management after M&A. It is necessary to strengthen the cost control, and reorganize the management of subsidiaries if necessary to avoid excessive costs. Besides, assessment indexes should be reasonably formulated to avoid the blind expansion of subsidiaries.

#### **4.2.3. Focusing on Resource Integration and Increasing Market Share**

After M&A, enterprises need to focus on the integration of various resources, including strategies, management, businesses and technologies, to promote the integration of related business. It is necessary to actively develop new businesses, expand new markets, increase market share and finally achieve the M&A effect of  $1+1>2$  so as to promote their development.

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