Analysis of China Eastern Airlines Financial Statements Based on Harvard Analysis Framework

Jinyi Cao

School of Economics and Management, NJUST, Nanjing, China

Abstract. The financial analysis method adopted in this paper refers to the analysis method in the "Harvard Analytical Framework System". Through the business strategy of the enterprise, the accounting policies adopted, the analysis of the company's finances and the analysis of the company's prospects, etc. The business situation, financial situation and development situation were analyzed and elaborated.This paper takes China Eastern Airlines' financial statements as an example, combines the characteristics of the air transport industry, analyzes the company's financial status, operating results and cash flow, and systematically evaluates the company's past and present operating results and financial status, and judges the company accordingly investment value.

Keywords: Financial Statement Analysis, Harvard framework, Air freight.

1. Introduction

The development level of the aviation transportation industry is an important indicator for measuring a country's economic and social modernization. The air transportation industry plays an irreplaceable role in the entire comprehensive transportation system. Especially in areas with inconvenient geographical environments, long-distance passenger transportation plays a very important role. In recent years, with the improvement of residents' income level, upgrading of consumption structure, and increasingly close cross regional economic relations, the scale of China's air transportation business has steadily increased, infrastructure capacity has significantly improved, industry marketization has continued to improve, and air transportation performance has significantly improved. The trunk network is well-established, and the development of regional aviation has reached a scale for the first time. The aviation transportation industry has made significant progress. There is indeed a need for enterprises to analyze financial statements.

2. Theoretical basis and References

2.1. The Proposal of Harvard Analysis Framework

Harvard professors Pepper, Shirley, and Bernard analyzed traditional financial analysis methods, analyzing the operational status of a company based on publicly disclosed financial information data, as well as the industry and social environment in which the company operates. Reflecting the company's financial situation, a new financial statement analysis system was proposed, later known as the "Harvard Analysis Framework"

2.2. On the Application of Harvard Framework

2.2.1 Strategic Analysis

Accurate company strategy formulation helps the company stay in the right direction of development for a considerable period of time, which is an important guarantee for the needs of investor managers and the achievement of the company's operational level goals. The company strategy should provide services to the company entities in the current environment at any time. Therefore, this article takes strategic analysis as the logical starting point for financial statement analysis.

The strategic analysis in this article mainly adopts methods such as industry analysis and Porter's Five Forces model to analyze and evaluate the company's strategy.

2.2.2 Accounting analysis

Accounting analysis mainly evaluates the main accounting policies and estimates of the enterprise, the flexibility of the enterprise's accounting policies, evaluates the accounting policies of the enterprise, evaluates the quality of enterprise information disclosure, identifies the risks of enterprise accounting information, and minimizes the impact of losing the authenticity of accounting information as much as possible.

2.2.3 Financial analysis

The goal of financial analysis is to use financial data to evaluate a company's current situation and past performance. The methods of financial analysis include common proportion method, trend analysis method, proportion analysis method, cash flow analysis method, simulation reporting method, etc. Through financial analysis, it is possible to understand a company's financial risks, profitability, operational capabilities, and management level through data. The comprehensive analysis method can analyze the problems and motivations of enterprises.

2.2.4 Prospect analysis

After analyzing the company's strategy, accounting policies, and financial data used, it is possible to evaluate the company's future value trends.

This article adopts qualitative and quantitative analysis methods to evaluate and predict the future development prospects of Southern Airlines. When conducting qualitative analysis, this article will provide an explanation of the opportunities and risks that enterprises face in their development based on the conclusions of strategic analysis, accounting analysis, and financial analysis, as well as national policies and industry development plans. When using quantitative analysis, this article intends to use financial indicators such as stock interest rate and market purity to analyze and predict the value and development prospects of enterprises.

2.3. References

Professors Pepper, Shirley, and Bernard from Harvard University analyzed traditional financial analysis methods, analyzed the financial information data disclosed by enterprises to the outside world, analyzed the business situation of the enterprise, as well as the industry and social environment in which the enterprise operates. Reflecting the company's financial situation, a new financial statement analysis system was proposed, later known as the "Harvard Analysis Framework"[1].

Gary Ashworth and Paul James proposed the theory of the "economic profit tree", and it was through this economic theory that the Harvard framework system was able to form a stable and reliable evaluation system with a more rapid trend in the following years[2].

Bologna J, Lindquist RJ, and Wells JT found in their research on the financial crisis that began in 2008 that the impact of a company's financial statements on stock investment varies greatly in different situations [3]. In another study, they pointed out that financial statements are a very important investment analysis tool. And they pointed out in their own research that financial statements are a very important investment analysis tool[4]

Clyde P. Stickney divided the company's financial statement analysis into three steps. The first step is to analyze the accounting policies adopted by the company through accounting data; Secondly, conduct accounting analysis; Thirdly, conduct financial analysis[5].

Isabel J David Cabedo and Jones Miguel Tirado designed a risk quantification model to improve financial analysis[6].

Ball and Brown conducted an empirical study on 261 listed companies on the New York Stock Exchange between 1946 and 1965, and found a certain relationship between financial information and stock prices. Therefore, in-depth research indicates that financial information has a significant impact on investment strategies[7].

3. Analysis of Financial Statements of China Southern Airlines

3.1. Introduction to China Southern Airlines

China Southern Airlines Group Co., Ltd. is headquartered in Guangzhou and was established on March 25, 1995. It is the airline with the most transport aircraft, the most developed route network, and the largest annual passenger flow in China. In October 2018, China Southern Airlines Group Co., Ltd. was listed on Forbes' 2018 Global Best Employers List. On November 15th, China Southern Airlines announced its withdrawal from the SkyTeam Alliance starting from 2019. It completed all transition work to leave the SkyTeam Alliance on December 31st, 2019, and officially withdrew from the Sky Team Alliance starting from January 1st, 2020. On September 1, 2019, the 2019 China Service Industry Top 500 list was released in Jinan, with China Southern Airlines Group Co., Ltd. ranking 55th. In April 2020, it was selected as a "Science and Technology Reform Demonstration Enterprise" by the State owned Assets Supervision and Administration Commission of the State Council.

As of January 2021, the total size of China Southern Airlines fleet has reached over 800 aircraft.

3.2. Strategic Analysis of China Southern Airlines

3.2.1 Policy environment

According to the national development strategy, promoting the new urbanization of the country, adjusting the transportation structure, developing a modern comprehensive transportation system, supporting the development of the Northeast region, and comprehensively revitalizing the Northeast, civil aviation transportation is one of the important nodes. Field function layout. Build international hub airports, build world-class airport clusters in Beijing Tianjin Hebei, Yangtze River Delta, the Pearl River Delta, accelerate the construction of international aviation hubs in Harbin, Shenzhen, Kunming, Chengdu, Chongqing, Xi'an, Urumqi, etc., strengthen the function of regional hub airports, implement the construction, construction and expansion projects of some new trunk line airports, and improve various aviation supporting facilities in succession.

3.2.2 Economic environment

With the continuous development of China's economy, the air transportation market has also brought opportunities and tremendous changes. Last year, the total transportation volume completed by the entire industry was 10.308 billion tons, a year-on-year increase of 12.6%. The total completed transportation volume of domestic routes was 69.46 billion tons, an increase of 11.7% compared to the previous year. Among them, the Hong Kong Macau route completed 1.61 billion ton kilometers, a year-on-year increase of 4.3%.

The total completed transportation volume of international lines was 38.848 billion tons, an increase of 14.3% compared to last year. Over the past five years, the total transportation volume of the entire industry has increased by an average of 12.2% annually.

3.2.3 Social environment

The living standards are constantly improving, the demand structure is constantly adjusting and optimizing, and the basic role of consumption is further strengthened. In 2018, the Engel's coefficient for national residents was 28.4%, a decrease of 0.9 percentage points from last year. The number of domestic tourists is about 5.54 billion, with tourism revenue of about 5.1 trillion yuan, an increase of 10.8% and 12.3% compared to last year.

3.2.4 Industry environment

The following uses Porter's Five Forces model to analyze the industry in which China Eastern Airlines operates.

(1) Suppliers: The main suppliers are aviation manufacturing companies and airport service industries, and the current situation is that supply is less than demand.

(2) Alternative products: There are many alternative methods in the field of short distance transportation, but there are basically no other options in the long-distance transportation stage.

(3) Buyer: The overall consumption level is gradually improving, and the demand structure is relatively single.

(4) Potential entrants: The aviation industry requires too much capital, the admission mechanism is cumbersome, there are many obstacles, and the difficulty of entry is very high.

(5) Industry competition situation: Based on the above four points, we can ultimately infer that China Eastern Airlines is in a highly competitive industry with many competitors.

3.3. Accounting Analysis of China Southern Airlines

Table 1. Key data for the financial statements of China Southern Airlines from 2013 to 2017

Project	2013	2014	2015	2016	2017
Assets	165,145	189,697	186,250	200,461	218,329
Liabilities	122,933	145,423	136,677	145,753	156,164
Ewner's equity	42,212	44,274	49,573	54,708	62,165
Net profit	2,649	2,418	4,986	5,889	6,833
Earnings per share	0.39	0.18	0.19	0.51	0.60

From Table 1, it can be seen that from 2013 to 2017, the assets and owner's equity of China Southern Airlines have been increasing year by year, while the overall indicators of liabilities and net profit have shown an upward trend. This means that China Southern Airlines is in a relatively good development trend, with the company's scale continuously expanding and the net profit generated by the company every year also increasing.

In addition, we can observe that the overall data of China Southern Airlines showed a slight decline in 2014 compared to 2013, and after a stable period in 2015, it resumed an upward trend in 2016.

By comparing the development trajectory of China Southern Airlines with the aviation industry as a whole, we can find that its development model is closely related to the overall state of the industry, and its overall strategy is in line with the changing trends of the industry environment. It can formulate appropriate corporate policies to cope with competition and challenges in different economic environments, while also ensuring the rights and interests of shareholders to a large extent.

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3.4. Financial Analysis of China Southern Financial Company

3.4.1 Debt repayment analysis

Table 2. China Southern Airlines Debt Service Capability Indicators for 2013-2017

Project	2013	2014	2015	2016	2017
Quick ratio (%)	0.42	0.51	0.22	0.20	0.26
Cash ratio (%)	0.38	0.48	0.20	0.18	0.23
Current ratio (%)	0.26	0.34	0.08	0.07	0.10

Table 3. China's aviation transportation industry Capability Indicators for 2013-2017

Project	2013	2014	2015	2016	2017
Quick ratio (%)	1.96	1.63	1.36	1.18	1.22
Cash ratio (%)	1.89	1.56	1.30	1.14	1.18
Current ratio (%)	1.02	0.83	0.77	0.58	0.73

From 2013 to 2014, the current ratio, quick ratio, and cash ratio all showed an upward trend. It can be concluded that during this period, Southern Company maintained a stable development strategy, actively committed to building the company's soft power without significantly expanding its overall scale, continuously improving brand influence and employee business level, laying a good foundation for the company's internationalization and future development. Secondly, from 2014 to 2016, the current ratio, quick ratio, and cash ratio all showed a downward trend. After considering the environment and strategies adopted by China Southern Airlines from 2014 to 2016, it is not difficult to find that from 2014 to 2016, China Southern Airlines had accumulated sufficient resources and funds. Therefore, it chose to purchase a large number of aircraft to expand its aircraft team, further enhance its market competitiveness, occupy more market share, and enhance the brand influence of China Southern Airlines. The fact is that as of 2015, China Southern Airlines ranked first in Asia and fifth in the world in terms of fleet size. However, by the end of 2016, China Southern Airlines' fleet size had risen to fourth in the world. The continuously increasing fleet size has brought more market share and brand influence to China Southern Airlines, while also increasing its current liabilities such as accounts payable, accounts receivable, and taxes payable. At the same time, larger fleets also require larger supporting facilities to operate well, including more crew members, more equipment maintenance personnel, and communication and coordination personnel. In addition, the increased purchase of aviation fuel and other expensive aviation consumables has greatly increased the inventory costs of China Southern Airlines. Therefore, from 2015 to 2016, the current ratio, quick ratio, and cash ratio have been showing a downward trend.

Based on the above data, it can be seen that the quick ratio, current ratio, and cash ratio are all below 1, indicating that China Southern Airlines' short-term solvency is at a relatively low level. In addition, comparing the debt repayment level of Southern Airlines with the industry average, it can be seen that Southern Airlines is at a disadvantage in terms of short-term debt repayment ability compared to its competitors in the same industry.

3.4.2 Profitability analysis

Table 4. Profitability indicators of Southern Airlines from 2013 to 2017

Project	2013	2014	2015	2016	2017
Return on equity (%)	5.55	4.99	9.88	11.71	11.92
Total asset profit margin (%)	1.34	3.01	2.68	2.94	3.13
Operating profit margin (%)	1.44	0.37	2.35	3.03	6.34

According to Table 4, it can be seen that the trend of changes in the net asset return rate, total asset return rate, and operating profit margin of Southern Airlines over time is basically the same. Between 2013 and 2014, the return on equity and operating profit margin of China Southern Airlines showed a downward trend, as the economic environment was relatively severe, global economic performance was struggling, and China's economic development was also greatly hindered. China Southern Airlines' operating profit growth was weak, while China Southern Airlines actively expanded its company size. Costs and various liabilities increased rapidly, and total assets continued to increase. A large amount of revenue needed to compensate for liabilities and expenses, resulting in a lower profit margin. On the other hand, in 2015, the national economic situation eased and policies were more favorable for airlines. Southern Airlines took this opportunity to actively expand its company size, and under the matrix management model, Southern Airlines was able to better manage its resources, obtain more opportunities and market share with limited resources, and fully enjoy the policy dividend. After its rapid expansion in 2015, Southern Airlines has steadily improved its brand and service level, while also gaining new opportunities. Between 2015 and 2017, global travel was prevalent worldwide, during which international air transportation grew rapidly, while domestic outbound travel was also exceptionally popular. In addition, with the continuous improvement of people's living standards, the number of long-distance travel has also increased significantly compared to before. In addition, during this period, the prices of aviation consumables such as aviation fuel have also been at a relatively low level, with average costs at their lowest point in recent years. Southern Airlines has seized this opportunity very well, and in the past three years, its net asset return on investment, total asset return on investment, and operating profit margin have been growing.

With limited resources, it has achieved huge profit growth, which reflects its strong profitability, strong capital appreciation ability, strong investment return ability, and profitability that can meet the needs of most investors.

3.4.3 Operational capability analysis

Table 5. Operating Capacity|
Data of Southern Airlines from 2013 to 2017

Project	2013	2014	2015	2016	2017
Accounts receivable turnover times	47.89	44.05	47.97	52.11	59.41
Accounts receivable turnover days	8	8	7.5	6.9	6.1
Inventory turnover times	51.90	57.53	65.99	60.04	69.59

Regarding the turnover of accounts receivable, as shown in Table 4, due to the decrease in the turnover of accounts receivable of China Southern Airlines from 2013 to 2014, the turnover of accounts receivable remained unchanged, resulting in a decrease in the efficiency of accounts receivable processing and a decline in management capabilities of China Southern Airlines. 2015 has once again become a turning point, with the number of turns in accounts receivable continuously increasing since 2015. The number of days in which accounts receivable turn has sharply decreased, reflecting the improved efficiency of accounts receivable processing and a significant increase in operational capacity of Southern Airlines. Regarding inventory turnover, the overall weekly inventory turnover from Table 4 to 2013 shows an upward trend. Southern Airlines has high inventory processing efficiency and strong operational capabilities.

Table 6. Asset turnover data of China Southern Airlines from 2013 to 2017

Project	2013	2014	2015	2016	2017
Current asset turnover rate (%)	5.3	4.5	5.28	8.15	8.06
Fixed asset turnover rate (%)	0.88	0.84	0.79	0.79	0.83
Total asset turnover rate (%)	0.64	0.61	0.59	0.75	0.60

Regarding the turnover of current assets, from Table 6, it can be seen that the overall turnover rate of current assets of China Southern Airlines is on the rise, with a slight decline in 2014. China Southern Airlines has continuously improved its ability to handle current assets, and its related operational level is improving.

Regarding fixed asset turnover, the fixed asset conversion rate in 2013 was the highest point during the survey period, and the fixed asset turnover rate will remain at a low level in the coming years, indicating a decline in China Southern Airlines' fixed asset processing capacity and related operational capabilities.

By combining the turnover status of current assets and fixed assets, it can be found that there was no significant change in the total asset turnover rate of China Southern Airlines from 2013 to 2017. Therefore, there was no significant change in the operational capacity of Southern Airlines from 2013 to 2017, and it remained at a surface stable level.

3.5. Analysis of the Development Prospects of China Southern Airlines

In order to demonstrate the development of Southern Airlines from 2013 to 2017, this article selects three main data points: growth rate of main business revenue, growth rate of net profit, and growth rate of total assets to show the changes in the development of Southern Airlines. The specific data is shown in Table 7:

Table 7. Development data of China Southern Airlines from 2013 to 2017

Project	2013	2014	2015	2016	2017
Revenue growth rate (%)	-3.3	10.38	2.91	2.98	11.10
Net profit growth rate (%)	-30.20	-8.72	106.20	18.09	16.05
Total asset growth rate (%)	15.90	14.87	-1.81	7.63	8.91

In terms of the growth rate of main business revenue, it can be seen from Table 6 that there was a negative growth in main business revenue in 2013, because the global economy was in a downturn in 2013, and high-speed rail was widely popular in China in 2013, which severely impacted the aviation industry. Starting from 2014, international aviation oil prices began to decline significantly, resulting in an increase in the main business revenue of Southern Airlines. In 2017, the international economic situation was the best in five years, and Southern Airlines seized the opportunity to achieve significant revenue growth.

In terms of net asset growth rate, from 2013 to 2014, the severe global economic situation coupled with the impact on the domestic high-speed rail industry led to sustained negative growth in net profit. However, since 2015, the global economy has rebounded, and international aviation oil prices have also continued to decline. Taking this opportunity, Southern Airlines has achieved huge revenue growth.

In terms of total assets, due to China Southern Airlines adhering to its expansion policy from 2013 to 2017, its total assets were able to continue to grow. In 2015, due to fleet updates, many old aircraft models withdrew from service, resulting in a negative growth in total assets in the short term.

From this, it can be seen that Southern Airlines has a stable and positive development status, and can design development strategies that are in line with the characteristics of the enterprise according to different economic policy environments. The enterprise itself has strong strength and will still be in a good development situation in the future, which is worth investing in for investors.

4. Summary

This article uses the Harvard framework analysis method to analyze the financial statements of Southern Airlines from 2013 to 2017, and conducts strategic analysis, accounting analysis, financial analysis, and prospect analysis for Southern Airlines. Among them, the focus was on analyzing the debt paying ability, profitability, operational ability, development ability, and financial health status of Southern Airlines. Based on this, it was concluded that Southern Airlines is a relatively outstanding company in the industry, with strong competitiveness, relatively healthy financial situation, appropriate strategic policy formulation, outstanding management and operational ability, sufficient capital, good development prospects, and suitable investment choices for investors. The disadvantage lies in the fact that the efficiency of dealing with fixed assets has not been ideal, and there are also certain problems in dealing with liabilities. It is recommended that Southern Airlines improve the utilization efficiency of fixed assets and the handling efficiency of liabilities, always adhere to the correct long-term strategic policy, continuously enhance brand influence and employee business quality, and actively explore the international market and look globally after doing well in the domestic market, in order to achieve greater development.

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