

Financial risk early warning research of new energy photovoltaic enterprises based on efficacy coefficient method- Take Company A as an example

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Abstract. In this study, company A is taken as A case, and the efficacy coefficient method is adopted to deeply study the financial situation of new energy photovoltaic enterprises from the perspective of financial risk early warning. As A leader in the photovoltaic industry, its financial health has an important impact on the stability and sustainable development of the whole industry. By establishing the efficacy coefficient model, comprehensively considering the financial indicators, market environment and industry trends of the enterprise, the financial risks of Company A are comprehensively evaluated. The research not only focuses on the traditional financial indicators such as the profitability, solvency and operating efficiency of enterprises, but also integrates the internal environment, external environment, scientific and technological innovation and environmental protection into the model, thus improving the comprehensiveness and reliability of the early warning model. In the empirical analysis, we found that Company A has shown good financial health in recent years, but it also faces some risks and challenges in the face of increasingly fierce competition in the industry. Through the application of the efficacy coefficient method, we can grasp the financial situation of enterprises more comprehensively and accurately, find the potential risk signs in advance, and provide scientific decision-making basis for the decision makers of enterprises. This research provides a new perspective and method for the financial risk management of photovoltaic enterprises and the new energy industry, and provides strong support for the enterprise decision makers to formulate scientific and effective financial strategies. The future research direction can further explore the new financial early warning model on the basis of the efficacy coefficient method, so as to better serve the sustainable development and risk prevention of enterprises.

Key words: A company financial risk early warning efficacy coefficient method

1. Introduction

1.1. Research background

With global resource shortage and environmental deterioration, global primary energy consumption continues to grow, reaching 14.366 billion tons of oil equivalent in 2022, up 2.2% year on year. However, traditional fossil fuel storage is limited, and countries are actively looking for alternatives. The use of new energy sources, such as solar, wind, and biomass energy, has improved resource shortages and environmental problems. Compared with traditional energy, new energy is more environmentally friendly and renewable, which avoids the exhaustion of energy. Therefore, China attaches special importance to the development of new energy industry, and has introduced a series of policies to support new energy enterprises.

In recent years, with the progress of science and technology, the number of new energy enterprises has increased, the development prospect is broad, the scale is constantly expanding, and the technology and industry continue to innovate, which has promoted the rapid development of the industry. As new energy enterprises are technology-intensive and capital-intensive industries, product innovation is the core, which requires a large amount of funds for technology development and innovation. The research and development cycle is long and the return is slow, which is easy to cause financial risks. In addition, new energy enterprises have a short development time, small project scale, low yield and financing difficulties, which increase financial risks. Investment in intangible assets

and fixed assets is crucial to the development of enterprises, but most new energy enterprises are in the growth stage, with weak financing ability, difficult to obtain large funds, sensitive market changes and low anti-risk ability, leading to difficulties in obtaining funds, resulting in financial risks.

New energy enterprises rely on state subsidies to maintain production and operation. The lag of subsidies exacerbates the capital turnover problem, increases the debt burden, reduces the profitability, and further increases the financial risks. In general, the financial risk characteristics of new energy enterprises include: large initial investment, high capital demand, low capital utilization rate, long investment return cycle, financing difficulties, over-reliance on government subsidies, and low yield rate.

In the financial risk early warning analysis, the commonly used methods are qualitative analysis method and quantitative analysis method. This paper uses the improved efficacy coefficient method to conduct the financial risk early warning analysis. Different from the univariable early warning model, the efficacy coefficient method can comprehensively evaluate the financial risk of enterprises in multiple dimensions. According to the principle of multi-objective planning, this method scores the evaluation objects from different aspects, and each index standard is divided into five grades (excellent, good, average, low and poor), and the proportion of basic points and adjusted points is adjusted to improve the objectivity of the model.

1.2. Research technique

(1) Case analysis method:

This paper takes A company as A case enterprise to conduct financial risk analysis and financial risk warning research, and finally establish A comprehensive financial risk warning system, and put forward targeted financial risk prevention suggestions.

(2) Literature research method:

In the process of writing the paper, we carefully read the relevant literature of enterprise financial risk early warning and financial risk prevention, and draw on the research results of previous scholars to pave the way for this paper.

(3) Quantitative analysis method:

Based on the efficacy coefficient method, establish an early warning system in line with the business situation of A company. Combined with the characteristics of the new energy photovoltaic industry and referring to the performance evaluation standards, the early warning index system is constructed, and the efficacy coefficient method is used to calculate and analyze the financial indicators of company A enterprises in recent years. Combined with the evaluation and analysis of the financial data of company A in the past years, considering the characteristics of the new energy photovoltaic industry, the financial risk problems of company A company are identified, and A set of early warning system consistent with the financial situation of company A company was established.

(4)way of qualitative analysis:

Make A qualitative analysis of the financial status and risk early warning results of company A. Qualitative analysis of the changes in the industry and policy background of Company A, and identification of the financial risks faced by Company A based on the development trend of daily operation in recent years. According to the risk warning results, qualitative research is used to analyze, and measures are put forward for company A enterprises.

2. Company A. Financial environment and current situation

2.1. A company profile

2.1.1. Company profile

A Company Science & Technology Co., Ltd. (Company A) was founded in 2000 and initially engaged in the semiconductor business. In 2006, it turned to the photovoltaic field, focusing on the single crystal route. In 2007, it started to layout photovoltaic monocrystalline silicon wafers, and was

listed on the Shanghai Stock Exchange in 2012 (stock code: 601012). By 2013, Company A has achieved the first place in the production and sales of monocrystalline silicon wafers in the world, and has mastered the RCZ technology and diamond wire slicing technology. Since 2014, the company has expanded to the upstream and downstream of the photovoltaic industry chain, covering solar cells, modules, photovoltaic power stations and EPC construction, and while conducting overseas layout to enhance global competitiveness. In 2018, it became the world's largest photovoltaic company by market capitalization, and in 2020, it became the world's largest manufacturer of solar monocrystalline silicon photovoltaic products. Company A's goal is to become the world's most competitive photovoltaic technology company, and its mission is to create A green energy world with solar energy and focus on technological innovation.

Company A's business covers five sectors: monocrystalline silicon wafers, battery components, industrial and commercial distributed solutions, green energy solutions and hydrogen energy equipment. The company is committed to promoting the development of global zero-carbon "green electricity" and "green hydrogen" products and solutions. Through more than 20 years of efforts, A company has become the world's largest solar monocrystalline silicon manufacturer, covering the entire photovoltaic industry chain, including research and development, production and sales of silicon wafers, monocrystalline silicon rods and solar cells, as well as photovoltaic power station development. Longji has established bases to produce monocrystalline silicon rods and wafers in Yinchuan, Ningxia Province, Xi'an, Shaanxi Province and Kuching, Malaysia. The photovoltaic power station business is mainly carried out in Chuzhou, Anhui province, Taizhou, Jiangsu Province, Quzhou, Zhejiang Province and Beijiang, Vietnam. The company has established logistics centers in the Netherlands, Japan, the United States, Brazil and other places, and has sales agencies in the United States, Japan, India, Australia, the United Arab Emirates and other countries, with business in more than 150 countries and regions around the world. Enterprise development process

2.1.2. Business situation of Company A

In 2022, Company A achieved an operating income of 128.998 billion yuan, ranking the 530th in the world, and rose for five consecutive years. It was ranked the first in the 2022 photovoltaic enterprises by Forbes, ranked the 7th in China's energy and chemical manufacturing industry, and ranked the top in the TOP50 of industrial enterprises with sustainable development. As the world's leading solar energy technology company, Company A adheres to the principle of "leading products, efficient operation, practical cooperation and stable operation", and has been widely recognized for its high-quality products and brand influence. In 2022, the shipment of monocrystalline silicon wafer is 85.06GW, the first in the world for 9 consecutive years; the shipment of single crystal components is 46.76GW, the first in the world for three consecutive years. The company focuses on scientific and technological innovation. Since April 2021, the company has broken the world record for solar cell efficiency 14 times, with the highest efficiency of 26.81%.

Company A's main business includes five sectors: monocrystalline silicon wafers, battery components, industrial and commercial distributed solutions, green energy solutions and hydrogen energy equipment. According to the financial report in 2022, the gross margin of solar module and battery is 13.65%, accounting for 58.40% of the profit; the gross margin of silicon wafer and silicon rod is 27.55%, accounting for 33.92%; the gross margin of power station construction and service, power and other is 17.17%, 62.15% and 62.03% respectively, accounting for 8.24% of the profit. The company's domestic profit accounted for 52.55%, and overseas 47.45%.

The gross profit margin of photovoltaic products was 17.42%, accounting for 96.27% of profit; the gross profit margin of photovoltaic power station was 24.03%, accounting for 3.69% of profit. The company's domestic and foreign profits accounted for 62.84% and 37.16%, respectively. In the past three years, the overseas revenue of Company A accounted for 39.32%, 46.89% and 37.16% respectively. Despite the rapid growth of overseas markets, the proportion of domestic profit shows the trend of the company's business development to domestic recovery.

2.2. Construct the enterprise financial risk early warning system of Company A based on the efficacy coefficient method

2.2.1. Correlation theory of the efficacy coefficient method

First of all, the efficacy coefficient method has strong comprehensiveness and flexibility, and can deal with a wide range of financial indicators. Secondly, the efficacy coefficient method has strong feasibility and operability, so it is not necessary to assume that the data meets the normal distribution, which is easy to operate compared with the Logistic regression model. Finally, the efficacy coefficient method can directly measure and convey the changes of corporate financial risks in combination with industry standards.

However, the efficacy coefficient method is also insufficient. The traditional method needs to set the optimal and worst levels of each index as satisfactory and disallowed values, but the lack of appropriate standards is easy to be easily affected by extreme values, resulting in poor stability of evaluation results. The improved efficacy coefficient method increases the gear to five levels, namely excellent, good, average, low and worst. The difference between each level coefficient is 0.2, and the standard coefficient interval is 0 to 1, thus improving the accuracy and stability of the evaluation. The corresponding standard coefficient is shown below

Table 1. gear coefficient table

gear	worst	lower	average	good	outstanding
coefficient	0.2	0.4	0.6	0.8	1

If the actual value is, the corresponding score is obtained, and the specific standard coefficient corresponds to Table 5 below

(1) Calculation steps of efficacy coefficient method:

The calculation steps of the improved efficiency coefficient method are shown as follows:

Step 1: determine the actual value, weight, and evaluation standard value

Actual value = the actual value of all financial indicators of the enterprise in that year (1)

Step 2: Determine the standard coefficient, efficacy coefficient, basic score and adjustment score of this file, among which the standard of this file is set

Numbers were obtained by consulting the standard value table.

Efficacy coefficient = (actual value of this file index-standard value of this file) / (upper file standard value-standard value of this file)

(2)

If the actual value of each index is better than the excellent grade, the efficacy coefficient is 1; if the actual value is worse than the worst grade,

Then the efficacy coefficient is taken as 0.

Basic score of this document = weight of single index * standard coefficient of this document (3)

Basic score = single index weight * upper standard coefficient (4)

Adjustment score = efficacy coefficient * (upper basic score-current basic score) (5)

Step 3: Determine the score of individual indicators and the comprehensive early warning value

Individual index score = basic score of this file + adjustment score (6)

Index category score = single index score (7)

Comprehensive score = single index score = index score (8)

If the standard coefficient of a single index is 1, there is no need to adjust it, that is, the adjustment is 0.

2.2.2. Standard value of financial indicators is determined

In order to accurately evaluate each index and judge the ability and risk degree of each index, it is necessary to establish evaluation criteria. SasAC Evaluation and Evaluation Bureau issued the "Enterprise Performance Assessment Standard Value", which published the standard value of the whole industry of the photovoltaic industry. The final score is obtained as the assessment standard and combined with the actual data of each year. Such an evaluation, while ensuring the accuracy of

the calculation, also shows the scientific nature of the establishment system. The standard values of the photovoltaic industry in 2022 are shown in Table 2:

Table 2. Solar power industry standard value in 2022

project	financial index	Excellent value	Good value	average value	Lower value	low
debt paying ability	Asset-liability ratio A1	55.3	62.1	65.9	73.9	79.3
	The fast-moving ratio, A2	1.5	1.3	0.9	0.6	0.4
	Cash current liability ratio A3	39.4	27.2	13.8	7.1	2.6
	Received interest multiple A4	3.9	2.9	2.4	1.9	1.6
profitability	Return on equity B1	15.5	12.3	7.6	3.7	1.1
	Sales (operating) profit margin B2	42.2	34.7	23.4	16.5	12
	Surplus cash guarantee multiple B3	7.5	4.4	2.6	1.8	0.4
	Return on capital: B5	15.0	11.1	6.1	-1.1	-5.1
operation capacity	Accounts receivable turnover rate C2	3.4	2	1.2	0.9	0.4
	Asset cash recovery rate: C4	9.4	5.8	3.3	-0.2	-8.8
	Inventory turnover rate of C5	66.8	49.8	24.4	19.9	11
Growth ability	Growth rate of total assets D1	21.5	11.4	6.2	-2.7	-6.6
	Sales (business) growth rate: D2	16.8	11.4	8.6	0.1	-5.6
	The growth rate of capital preservation is D3	115	111.7	106.7	102.6	99.8
	Sales (operating) profit growth rate D4	81.3	37.8	8.8	-22.4	-43.2

2.2.3. Financial risk early warning interval division

The division of early warning level is conducive to the clearer presentation of enterprise financial risk degree, and is also the most important step in the study of enterprise financial risk early warning. The final division of the score interval is determined according to the Implementation Rules of Enterprise Comprehensive Performance Evaluation issued by the State-owned Assets Supervision and Administration Commission of the State Council, and according to the early warning level of financial risk of enterprises. The financial warning risk level interval is shown in Table 3:

Table 3. Interval division of financial early warning risk levels

Early warning level	Giant police	Heavy police	In the police	Light police	No police
Warning score	(0,20]	(20,40]	(40,60]	(60,80]	(80,100]
Risk status	Serious risk	Greater risk	Smaller risk	Focus on risk	devoid of risk

2.3. A Company of the effectiveness of corporate financial risk early warning system

2.3.1. Financial index scores of Longji enterprises from 2018 to 2022

Table 4. 4A Comprehensive score and total score of various indicators in 2018

financial index	weight (%)	actual value	Standard coefficient	Efficacy coefficient	Basic points of this file	adjusted score	Single index score
Asset-liability ratio A1 (%)	5.6	57.58	0.6	0.38	0.034	0.004	0.038
The fast-moving ratio A2 (%)	6.7	113.0	1	1.00	0.067	0.013	0.067
Cash flow liability ratio A3 (%)	4.0	7.89	0.2	0.94	0.008	0.007	0.015
Received interest multiple A4	7.9	11.74	1	1.00	0.079	0.016	0.079
Return on equity: B1 (%)	3.9	16.71	1	1.00	0.039	0.008	0.039
Sales (operating) profit margin B2 (%)	4.7	22.25	1	1.00	0.047	0.009	0.047
Surplus cash guarantee multiple B3	12.4	0.46	0.4	0.04	0.050	0.001	0.051
Return on capital, B5 (%)	3.7	91.97	1	-6.18	0.037	-0.046	-0.009
Accounts receivable turnover rate C2	11.5	5.31	0.4	0.22	0.046	0.005	0.051
Asset cash recovery rate is C4 (%)	3.9	2.96	0.4	0.15	0.015	0.001	0.017
Inventory turnover rate of C5	7.3	5.13	0.4	0.02	0.029	0.000	0.030
Total assets growth rate D1 (%)	8.9	20.60	1	1.00	0.089	0.018	0.089
Sales (operating) growth rate D2 (%)	7.8	34.38	1	1.00	0.078	0.016	0.078
Capital preservation growth rate D3 (%)	3.8	118.1	1	1.00	0.038	0.008	0.038
Sales (operating) profit growth rate D4 (%)	8.0	-28.2	0	1.03	0.000	0.016	0.016

Calculate the comprehensive score of the annual risk early warning index from 2018 to 2022 to judge the corresponding warning situation. The calculation table of early warning score of specific annual financial indicators is as follows:

Table 5. Comprehensive scores and total score of various indicators in 2018

class	Comprehensive score of class indicators	total points
debt paying ability	0.3163	0.8683
profitability	0.1256	
operation capacity	0.1844	
Growth ability	0.2420	

The calculation process and results of the financial indicators are shown in Table 4 and Table 5 above. The 2018 financial risk warning index into the early warning system, the score calculation table, know A company in 2018 solvency score 18.44 points, profitability score 31.63, operating capacity score 12.56, growth ability score 24.20 points, calculate the financial indicators, the final comprehensive score 38.29, belong to the heavy alert, has greater risk.

Table 6. A Individual scores of corporate financial indicators in 2019

financial index	weight (%)	actual value	Standard coefficient	Efficacy coefficient	Basic points of this file	adjusted score	Single index score
Asset-liability ratio A1 (%)	5.6%	52.3	0.8	0.34	0.045	0.004	0.049
The fast-moving ratio A2 (%)	6.7%	117.0	1	1.00	0.067	0.013	0.067
Cash flow liability ratio A3 (%)	4.0%	33.1	0.8	0.56	0.032	0.004	0.036
Received interest multiple A4	7.9%	26.0	1	1.00	0.079	0.016	0.079
Return on equity: B1 (%)	3.9%	23.9	1	1.00	0.039	0.008	0.039
Sales (operating) profit margin B2 (%)	4.7%	28.9	1	1.00	0.047	0.009	0.047
Surplus cash guarantee multiple B3	12.4%	1.5	0.4	0.59	0.050	0.015	0.064
Return on capital, B5 (%)	3.7%	147.3	1	1.00	0.037	0.007	0.037
Accounts receivable turnover rate C2	11.5%	8.0	0.6	0.25	0.069	0.006	0.075
Asset cash recovery rate is C4 (%)	3.9%	8.2	0.8	0.42	0.031	0.003	0.034
Inventory turnover rate of C5	7.3%	4.4	0.2	0.66	0.015	0.010	0.024
Total assets growth rate D1 (%)	8.9%	49.5	1	1.00	0.089	0.018	0.089
Sales (operating) growth rate D2 (%)	7.8%	49.6	1	1.00	0.078	0.016	0.078
Capital preservation growth rate D3 (%)	3.8%	168.2	1	1.00	0.038	0.008	0.038
Sales (operating) profit growth rate D4 (%)	8.0%	106.4	1	1.00	0.080	0.016	0.080

Table 7. Comprehensive scores and total score of various indicators in 2019

class	Comprehensive score of class indicators	total points
debt paying ability	0.2303	0.8359
profitability	0.1881	
operation capacity	0.1329	
grow upability	0.2846	

Table 8. A Individual scores of corporate financial indicators in 2020

financial index	weight (%)	actual value	Standard coefficient	Efficacy coefficient	Basic points of this file	adjusted score	Single index score
Asset-liability ratio A1 (%)	5.6%	59.4	0.4	0.922	0.022	0.010	0.033
The fast-moving ratio A2 (%)	6.7%	94.0	0.8	0.854	0.053	0.011	0.065
Cash flow liability ratio A3 (%)	4.0%	25.6	0.6	0.435	0.024	0.003	0.027
Received interest multiple A4	7.9%	27.2	1	1.000	0.079	0.016	0.079
Return on equity: B1 (%)	3.9%	27.2	1	1.000	0.039	0.008	0.039
Sales (operating) profit margin B2 (%)	4.7%	24.6	1	1.000	0.047	0.009	0.047
Surplus cash guarantee multiple B3	12.4%	1.3	0.4	0.282	0.050	0.007	0.057
Return on capital, B5 (%)	3.7%	230.7	1	1.000	0.037	0.007	0.037
Accounts receivable turnover rate C2	11.5%	9.8	0.8	0.109	0.092	0.003	0.094
Asset cash recovery rate is C4 (%)	3.9%	7.5	0.6	0.221	0.023	0.002	0.025
Inventory turnover rate of C5	7.3%	4.6	0.2	0.491	0.015	0.007	0.022
Total assets growth rate D1 (%)	8.9%	47.8	1	1.000	0.089	0.018	0.089
Sales (operating) growth rate D2 (%)	7.8%	65.9	1	1.000	0.078	0.016	0.078
Capital preservation growth rate D3 (%)	3.8%	125.8	1	1.000	0.038	0.008	0.038
Sales (operating) profit growth rate D4 (%)	8.0%	62.0	1	1.000	0.080	0.016	0.080

Table 9. A Comprehensive scores and total scores of various indicators in 2020

class	Comprehensive score of class indicators	total points
debt paying ability	0.2035	0.8093
profitability	0.1804	
operation capacity	0.1408	
Growth ability	0.2846	

Table 10. A Individual score of corporate financial indicators in 2022

financial index	weight (%)	actual value	Standard coefficient	Efficacy coefficient	Basic points of this file	adjusted score	Single index score
Asset-liability ratio A1 (%)	5.6%	51.31	0.8	0.46	0.045	0.005	0.050
The fast-moving ratio A2 (%)	6.7%	92.00	0.8	0.73	0.053	0.010	0.063
Cash flow liability ratio A3 (%)	4.0%	28.99	0.6	0.63	0.024	0.005	0.029
Received interest multiple A4	7.9%	12.29	1	1.00	0.079	0.016	0.079
Return on equity: B1 (%)	3.9%	21.45	1	1.00	0.039	0.008	0.039
Sales (operating) profit margin B2 (%)	4.7%	20.19	1	1.00	0.047	0.009	0.047
Surplus cash guarantee multiple B3	12.4%	1.36	0.4	0.51	0.050	0.013	0.062
Return on capital, B5 (%)	3.7%	167.63	1	1.00	0.037	0.007	0.037
Accounts receivable turnover rate C2	11.5%	10.70	0.8	0.36	0.092	0.008	0.100
Asset cash recovery rate is C4 (%)	3.9%	6.65	0.6	0.10	0.023	0.001	0.024
Inventory turnover rate of C5	7.3%	5.06	0.2	0.74	0.015	0.011	0.025
Total assets growth rate D1 (%)	8.9%	11.53	0.8	0.66	0.071	0.012	0.083
Sales (operating) growth rate D2 (%)	7.8%	48.27	1	1.00	0.078	0.016	0.078
Capital preservation growth rate D3 (%)	3.8%	133.68	1	1.00	0.038	0.008	0.038
Sales (operating) profit growth rate D4 (%)	8.0%	6.24	0.6	0.33	0.048	0.005	0.053

Table 11. Comprehensive scores and total score of various indicators of Company A in 2021

class	Comprehensive score of class indicators	total points
debt paying ability	0.3163	0.8076
profitability	0.1256	
operation capacity	0.1844	
Growth ability	0.2420	

Table 12. A Individual score of corporate financial indicators in 2022

Asset-liability ratio A1 (%)	5.6%	55.4	0.8	0.89	0.045	0.010	0.055
The fast-moving ratio A2 (%)	6.7%	111.0	1	1.00	0.067	0.013	0.067
Cash flow liability ratio A3 (%)	4.0%	40.3	0.8	0.89	0.032	0.007	0.039
Received interest multiple A4	7.9%	35.6	1	1.00	0.079	0.016	0.079
Return on equity: B1 (%)	3.9%	27.0	1	1.00	0.039	0.008	0.039
Sales (operating) profit margin B2 (%)	4.7%	15.4	0.2	0.69	0.009	0.006	0.016
Surplus cash guarantee multiple B3	12.4%	1.7	0.2	0.78	0.025	0.019	0.044
Return on capital, B5 (%)	3.7%	194.7	1	1.00	0.037	0.007	0.037
Accounts receivable turnover rate C2	11.5%	15.2	1	1.00	0.115	0.023	0.115
Asset cash recovery rate is C4 (%)	3.9%	10.3	0.8	0.57	0.031	0.004	0.035
Inventory turnover rate of C5	7.3%	6.5	0	0.23	0.000	0.003	0.003
Total assets growth rate D1 (%)	8.9%	42.8	1	1.00	0.089	0.018	0.089
Sales (operating) growth rate D2 (%)	7.8%	60.0	1	1.00	0.078	0.016	0.078
Capital preservation growth rate D3 (%)	3.8%	130.8	1	1.00	0.038	0.008	0.038
Sales (operating) profit growth rate D4 (%)	8.0%	63.0	0.8	0.16	0.064	0.002	0.066

Table 13. A Comprehensive scores and total scores of various indicators in 2022

class	Comprehensive score of class indicators	total points
debt paying ability	0.2391	0.8004
profitability	0.1369	
operation capacity	0.1533	
Growth ability	0.2711	

2.4. A Analysis of the early-warning results of the company

The formation of financial risk must not be achieved overnight, but affected by a variety of factors, the next will start from the seven index groups, one by one to analyze the early warning results. To facilitate data comparison over the years, the scores from 2018 to 2022 are summarized below Table 14

Table 14. A Financial Risk Warning score Table of the Company from 2018 to 2022

Indicator category	financial index	In 2018,	In 2019,	In 2020,	In 2021,	In 2022,
debt paying ability		19.87	23.03	20.35	22.06	23.91
	Asset-liability ratio A1	3.78	4.85	3.26	4.98	5.47
	The fast-moving ratio, A2	6.66	6.66	6.47	6.31	6.66
	Cash current liability ratio A3	1.54	3.64	2.74	2.89	3.89
	Received interest multiple A4	7.89	7.89	7.89	7.89	7.89
profitability		12.81	18.81	18.04	18.60	13.69
	Return on equity B1	3.92	3.92	3.92	3.92	3.92
	Sales (operating) profit margin B2	4.69	4.69	4.69	4.69	1.59
	Surplus cash guarantee multiple B3	5.09	6.45	5.68	6.24	4.44
	Return on capital: B5	-0.89	3.75	3.75	3.75	3.75
operation capacity		9.71	13.29	14.08	14.91	15.33
	Accounts receivable turnover rate C2	5.10	7.46	9.42	9.99	11.46
	Asset cash recovery rate: C4	1.66	3.41	2.48	2.39	3.52
	Inventory turnover rate of C5	2.95	2.42	2.18	2.54	0.34
Growth ability		22.13	28.46	28.46	25.19	27.11
	Growth rate of total assets D1	8.86	8.86	8.86	8.26	8.86
	Sales (business) growth rate: D2	7.81	7.81	7.81	7.81	7.81
	The growth rate of capital preservation is D3	3.82	3.82	3.82	3.82	3.82
	Sales (operating) profit growth rate D4	1.64	7.97	7.97	5.30	6.62
	Financial indicators score	64.53	83.59	80.93	80.76	80.04

2.4.1. Analysis of outcome analysis

According to the results of the calculation table, the solvency scores of Company A from 2018 to 2022 are 19.87,23.03,20.35,22.06 and 23.91 respectively. The full score of this indicators is 24.12. On the whole, the solvency of Company A is good in 2019 and 2022, and the value is almost close to the full score of the index from 2018 to 2020, and there is some gap between the full score. In 2018 and 2020, by analyzing the debt structure, we found that the proportion of current liabilities was large and the debt structure was unreasonable. Asset-liability ratio score is low, there is a certain repayment pressure. Its. The cash flow debt ratio of company A in 2019 and 2022 is almost close to the index full score. Other indicators are close to the full score in the last five years.

2.4.2. Profitability results analysis

From the perspective of enterprise early warning score, the profitability index score of Company A from 2018 to 2022 is respectively

12.81,18.81,18.04,18.60 and 13.69, the full score of this group is 24.81, high from 2019 to 2021, and 2022 is a downward trend, and the score of this index is some distance from the full score, which needs the attention of managers. The sales operating profit margin score in its category index remained stable from 2018 to 2021 and was close to the full score, but in 2022, the score had a large gap from the full score. In the past five years, the surplus cash guarantee multiple score is relatively stable, but it is far less than the full score, especially in 2022, where the score is the lowest, so we need to pay more attention to this index.

2.4.3. Analysis of the operating capability results

According to the results of the calculation table, the operating capacity scores of Company A from 2018 to 2022 are 9.7,13.29,14.08,14.91 and 15.33, respectively. The full score of such indicators is 22.62. The operating capacity score of company A in the past five years is increasing year by year, and the operating capacity index in 2022 is the highest, but the score is far less than the full score. It shows that the operating capacity of the enterprise is gradually rising, and the space for its rising is still large enough. The index score of the inventory turnover rate shows a downward trend year by year, indicating that there are some problems in the inventory turnover rate of enterprises, which need to be paid attention to. It may be caused by excessive procurement, poor sales or improper production planning, or delayed delivery, logistics problems or quality problems of suppliers.

2.4.4. Results analysis of growth ability

From the perspective of early warning results, the growth ability score of Company A from 2018 to 2022 was 22.13 points, 28.46 points, 28.46 points, 25.19 points and 27.11 points respectively. The full score of this index was 28.46 points, high in 2019,2020 and 2022, almost close to the full score, and low in 2018. According to the earnings performance of Company A in the past five years, the highest performance in 2019 and 2020 was because the company was affected by many policies.

3. A Company of corporate financial risk prevention suggestions

(1) Improve and optimize financing management

For enterprises, each business link needs a large amount of working capital, and these funds mainly come from the financing activities of enterprises. A longer recovery cycle and a higher asset-liability ratio will have an impact on the financing ability of enterprises. The best financing structure of an enterprise is to maximize the value of the enterprise and minimize the risks faced. Company A mainly adopts bond financing as the main financing method, which can be taxed to a certain extent through interest. At the same time, for listed companies, it can also promote the growth of the market value of the company's shares, and will not dilute the company's shares. According to the company's strategy and data analysis results, Company A has been in A state of expansion in recent years and has A greater demand for capital. Therefore, through the establishment of a high-quality financing structure, it can effectively prevent the financial risks that may be encountered in the financing process. Enterprises should actively look for multiple financing channels to realize the optimization and improvement of the financing structure. In the market economy environment, the financing of an enterprise is also considered by its credit status. The difficulty of financing depends to some extent on the repayment ability and credit rating of the enterprise. In order to enhance credit, Company A needs to strengthen its own credit system construction and win the trust of the market with its excellent reputation and perfect credit structure. At the same time, enterprises should also pay attention to the debt structure, scientific and reasonable planning and combination of short-term debt and long-term debt, avoid the excessive proportion of short-term debt, and ensure the long-term stable operation of enterprises. Such an approach will help companies to be more robust and flexible in financing.

(2) Reasonable control of expenses

In recent years, under the promotion of policy guidance and support, the photovoltaic industry has made significant progress and gradually occupies a certain scale in the market. Photovoltaic industry relying on a strong technical innovation ability and perfect management system gradually mature. Through the company's financial risk evaluation data and comprehensive analysis of the actual situation, it can be seen that its investment in technology research and development is larger, successfully promoted the energy conversion efficiency of photovoltaic cells, research and development expenses of effective use, show high rate of return, however, enterprises still face some constraints of non-technical cost, such as taxes, financial expenses, land rent and other related expenses, etc. Among these costs, the tax burden is one of the main factors affecting the photovoltaic power generation link, higher than the international level hindering the development of the industry. The capital required for photovoltaic power station construction is relatively high, resulting in high costs such as cultivated land occupation tax and urban land use tax, and the financing cost accounts for about half of the power generation cost of the power station. In order to reduce these costs, on the one hand, we need to rely on the support and guidance of national policies, on the other hand, it also needs photovoltaic enterprises to make reasonable arrangements in project planning. Effectively controlling the cost of photovoltaic enterprises can not only reduce the tax burden, but also reduce the overall operating cost of enterprises, and create a more favorable environment for the development of enterprises.

(3) Build an internal information platform

In the daily operation of Company A, it is essential to ensure effective communication between internal organizations. By building an information platform within the enterprise, each employee can participate in the financial risk control system of the enterprise, and realize the efficient integration of business and finance. With the help of ERP system, the integrated platform of enterprise production and sales and other departments has been established to realize the effective transmission of information and greatly improve the efficiency and quality of internal communication. For the management of the enterprise, this information platform can not only clearly present the actual operation status of the company, but also pass multiple tests in the process of data entry, so it can truly reflect the asset status of the enterprise. In the information platform, dynamic monitoring and real-time management are realized, and the operation and management ability of enterprises is comprehensively improved. For A company under the expansion strategy, inventory overstock may bring high costs, and the delayed recovery of receivables will also have A negative impact on the cash flow of the enterprise. Therefore, enterprises need to pay attention to the management of inventory and accounts receivable, and take appropriate measures to improve the speed of operation to prevent potential financial risks. With the support of the information platform, enterprises can find and deal with potential financial risks more timely, and improve the overall risk management level.

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