Comprehensive Evaluation of Financial Risk of Listed Companies in the Electronic Information Industry under the Background of "Internet +"

Jihui Sun[1,a *] and Liang Ma [2,b]

[1,2] Dalian University
No. 10 Xuefu Street, Dalian Economic and Technological Development Zone, Liaoning Province, China
[a] dlsunjihui @163.com; [b] felicityma888@163.com

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Abstract. With the advent of the "Internet +" era, the electronic information industry is closely related to the development of big data, cloud computing, artificial intelligence and block chain. Based on the characteristics of the new era, the evaluation and prevention of financial risks of electronic information enterprises is an important part of the enterprise management under the "Internet +" environment. Based on stakeholder theory, this paper uses three dimensions of shareholders and creditors, consumers and suppliers, employees, society and government to analyze operational risk, financial risk, allocation risk, investment risk and social responsibility risk, and uses factor analysis method to extract the main influencing factors of financial risk of Listed Companies in electronic information industry, and to establish electronic information bank. The comprehensive evaluation model of financial risk of Listed Companies in industry is put forward. Finally, the measures to prevent and improve financial risk are put forward.

Introduction

"Internet +" is "Internet + various traditional industries", but this addition is not a simple sum of the two, but through IT technology on the Internet platform to integrate traditional industries and networks in depth, creating a new development model. The remarkable feature of the "Internet +" era is the rapid development of electronic information technology. Electronic information technology has changed all aspects of our lives. The development of electronic information industry promotes the continuous penetration and integration of the Internet and other industries. Therefore, the healthy development of electronic information industry itself is an important node in the "Internet+environment". Research on financial risk of electronic information listed enterprises is helpful to prevent financial crisis and has become the focus of attention of enterprises[1].

Financial risk assessment is a process of making prediction and putting forward preventive opinions on the financial risk of an enterprise by calculating financial indicators, inspecting the financial situation of an enterprise from the perspective of an enterprise, based on the current national fiscal and taxation system and the current price system. Through the research and exploration of many scholars and practitioners, a relatively mature financial risk evaluation system has been formed. Based on the combination of credit risk and financial risk, this paper uses factor analysis method to make a comprehensive evaluation of the financial risk of Listed Companies in the electronic information industry in China, so as to take this as a lesson and promote the financial development of Listed Companies in the electronic information industry more comprehensively and systematically[2].

Research and Design

Sample selection. By consulting 109 listed companies in the electronic information industry of Oriental Fortune Network, this paper combines the big data concept stock, cloud computing concept stock, artificial intelligence concept stock and block chain concept stock. Through statistics, the

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results show that there are 14 listed companies in the electronic information industry of both concepts stock and above at the same time[3].

Table 1 Stock codes and names of listed companies

Company serial number	stock code	name	number	Stock code	name
1	000938	Violet shares	8	002195	2345
2	000977	Wave information	9	000555	Shenzhou information
3	603019	Dawn of Zhongke	10	600602	Yun Sai Chi Lian
4	000066	Great Wall of China	11	300366	Creative information
5	600797	Zhejiang University net new	12	002908	Desheng Technology
6	300130	New capital	13	000971	Gaosheng Holdings
7	300059	Eastmoney	14	002316	Asian Development

Definition of financial indicators. This paper is based on the current situation of the electronic information industry under the "Internet +" environment, combined with the characteristics of the electronic information industry and based on the balance sheet, profit statement and cash flow statement of the listed companies. Also based on the credit risk perspectives of consumers, suppliers, shareholders, creditors, employees, government and society, this paper analyses the operational risk, financing risk, allocation risk, investment risk and social responsibility risk, and constructs the financial credit risk evaluation index of Listed Companies in the electronic information industry in China.[4] Specific evaluation indicators are shown in Table 2.

Table 2 Evaluation Indicators of Financial Credit Risk

Consumer Credit Index Based on Consumer Supplier	Operation-al risk	x1 Receivable turnover rate	Main Business Income/Average Accounts Receivable
		x2 Inventory turnover	Main Business Cost/Average Inventory
	Financing risk	x3 Liquidity ratio	Current assets/current liabilities
		x4 Quick ratio	Quick assets/current liabilities
Capital Credit Index Based on Shareholders and Creditors		x5 Asset-liability ratio	Total liabilities/assets

		x6 Equity multiplier	Total assets/shareholders'equity
	Allocation risk	x7 Net operating interest rate	Net profit/operating income
		x8 Net interest rate on total assets	Net Profit/Average Total Assets
	investment risk	x9 Return on assets	Pre-tax Profit/Average Total Assets
Management Credit Index Based on Employee, Government and Society	Social responsibility risk	x10 Tax contribution rate	Total Tax/Operating Income

Data Sources and Data Processing. The financial data of 14 sample companies in 2017 are selected from the database of Dongfang Wealth Network. Factor analysis is carried out by SPSS.17 software[5]. In order to unify the evaluation criteria, the reciprocal method is adopted to deal with the asset-liability ratio. For the liquidity ratio, since the optimal value is 2, the forward formula $\frac{2-Yi}{max-min}$ is adopted. For the optimum speed ratio of 1, the forward formula $\frac{1-Yi}{max-min}$ is used.

Factor Analysis

Applicability test. The financial data were input into SPSS17.0 for KMO and Bartlett tests, and the results were shown in Table 3. The value of KMO is 0.624, greater than 0.5, which indicates that there is a strong correlation between the original data[6]. In Bartlett's sphericity test, the approximate chi-square is 123.9, DF is 45, Sig. is 0.000, and the corresponding probability P is close to 0. This sample is suitable for factor analysis.

Table 3 Examination of KMO and Bartlett

Kaiser-Meyer-Olkin Measure of Sampling Sufficiency。		.624
Bartlet's sphericity test	Approximate chi square	123.973
	Df	45
	Sig.	.000

Factor extraction. From Table 4, we can see that there are three variables whose initial eigenvalue is greater than 1. The cumulative contribution rate of variance reaches 85%, which is greater than 80% in principle[7]. It can be concluded that the loss of variable information is less and the result of factor analysis is more ideal.

Table 4 Total variance explanation

	Initial eigenvalue			Extract Square Sum Loading			Rotating Square Sum Loading		
Ingredients	Total	Variance %	accumulate %	Total	Variance %	accumulate %	Total	Variance %	accumulate %
1	5.106	51.056	51.056	5.106	51.056	51.056	3.634	36.341	36.341
2	2.143	21.433	72.489	2.143	21.433	72.489	3.094	30.935	67.276
3	1.251	12.511	85.000	1.251	12.511	85.000	1.772	17.724	85.000
4	.655	6.555	91.555						
5	.456	4.563	96.118						
6	.175	1.754	97.872						
7	.119	1.188	99.060						
8	.063	.629	99.689						
9	.025	.252	99.941						
10	.006	.059	100.000						

The rotation component matrix is obtained by using the orthogonal rotation method with Kaiser standardization. The rotation converges in six iterations. The results of rotation are shown in Table 5. Let Z1, Z2 and Z3 be the three extracted factors respectively. In factor Z1, the load of inventory turnover rate is 0.967, and the load of quick ratio is 0.812, which is much larger than other indicators. Based on the consumer credit of consumers and suppliers, it reflects the operational capacity of enterprises. In factor Z2, the load of asset-liability ratio is 0.798, and the load of asset-return ratio is 0.86. The load of these two indicators is much larger than that of other indicators, so Z2 reflects the capital structure from the perspective of capital credit of shareholders and creditors. In factor Z3, the factor load of account receivable turnover rate is 0.871, which is much larger than other indicators. Therefore, factor Z3 mainly reflects short-term solvency[8].

Table 5 Rotating Component Matrix

	Ingredients		
	1	2	3
Receivable turnover rate	-.005	-.106	.871
Inventory turnover	.967	.108	.131

Liquidity ratio	.768	-.583	-.046
Quick ratio	.812	-.533	-.009
Asset-liability ratio	-.418	.798	.213
Equity multiplier	.017	-.771	.245
Net operating interest rate	-.914	.122	-.093
Net interest rate on total assets	-.643	.609	.242
Return on assets	-.103	.860	.304
Tax contribution rate	-.124	-.302	-.854

Calculating factor score. Combining with the score coefficient matrix in Table 6, the financial risk index system model of Listed Companies in electronic information industry is established[9].

Table 6 Component Score Coefficient Matrix

	Ingredients		
	1	2	3
Receivable turnover rate	-.088	-.187	.554
Inventory turnover	.377	.240	-.006
Liquidity ratio	.165	-.101	.007
Quick ratio	.190	-.073	.019
Asset-liability ratio	.001	.252	.036
Equity multiplier	-.178	-.397	.270
Net operating interest rate	-.310	-.126	-.011
Net interest rate on total assets	-.127	.109	.100
Return on assets	.126	.335	.060
Tax contribution rate	-.051	-.036	-.470

Z1=-0.088x1+0.377x2+0.165x3+0.19x4+0.001x5-0.178x6-0.31x7-0.127x8+0.126x9-0.051x10
Z2=-0.187x1+0.24x2-0.101x3-0.073x40.252x5-0.397x6-0.126x7+0.109x8+0.335x9-0.036x10
Z3=0.554x1-0.006x2+0.007x3+0.019x4+0.036x5+0.27x6-0.011x7+0.1x8+0.06x9-0.47x10
Total Score Model Z=0.36341Z1+0.30935Z2+0.17724Z3

According to the established index coefficient model, the financial data of each company are brought in, the factor scores of each company are obtained, and the comprehensive forecast scores of each enterprise's financial situation are calculated[10]. The results are shown in Table 7.

Table 7 Factor scores and ranking of Listed Companies in electronic information industry

Company serial number	Z1		Z2		Z3		Z	
	score	ranking	score	ranking	score	ranking	score	ranking
1	1.45591	4	0.19733	6	5.04208	1	1.48379	2
2	1.14690	7	-0.51105	12	4.81685	2	1.11244	6
3	1.30588	5	0.04215	9	2.44893	5	0.92166	7
4	0.03420	11	-1.74191	14	4.07388	4	0.19562	12
5	2.28111	1	1.58328	3	1.98589	8	1.67074	1
6	0.75403	9	0.09301	7	2.17287	7	0.68791	10
7	-0.43924	12	-0.82071	13	1.46033	11	-0.15468	14

8	-1.27586	14	-0.07703	10	4.78883	3	0.36128	11
9	0.95355	8	0.07842	8	2.18693	6	0.75840	9
10	1.94495	2	1.80244	2	0.70210	12	1.38884	3
11	1.30342	6	1.84181	1	0.65100	14	1.15882	4
12	0.46593	10	1.51148	4	0.69883	13	0.76076	8
13	-0.70271	13	-0.38862	11	1.73992	10	-0.06721	13
14	1.84491	3	0.46064	5	1.85100	9	1.14103	5

Research conclusions. From Table 7, we can see that the Z1 scores of ZheDa Netcom New, Yunsai Zhilian and Asian Federation are higher, which shows that the three enterprises have strong operational capacity. Creative information, Yunsai Zhilian and ZheDaNet's new Z2 score is higher, which shows that the capital structure of these three companies is better. Ziguang shares, tide information, 2345 Z3 score is higher, indicating that the three companies have strong solvency. In a word, Ziguang shares, ZheDa Netxin and Yunsai Zhilian have higher comprehensive factor scores. In the following development strategy, the two enterprises should pay attention to the short-term solvency of enterprises and the ratio of the amount of accounts receivable to current assets. In addition, Ziguang shares ranked first in the comprehensive factor score, but Z1 and Z2 scores are relatively backward. In the future, we should pay attention to operational capacity and capital structure[11].

In the electronic information industry, the product renewal cycle is short, the product types are abundant, and the inventory backlog is easy. Therefore, enterprises should pay attention to inventory management, improve inventory management system, have risk awareness, and be able to get in and out of the warehouse in time. Accordingly, enterprises should improve their short-term solvency. For customers'accounts receivable, they should timely reconcile and clear accounts, avoid bad debts and increase their financial risks. For suppliers' accounts payable, enterprises should reasonably calculate the payment time, maximize the time value of money, and balance risks and benefits. Finally, enterprises should improve the comprehensive utilization rate of assets to create greater profits for enterprises. Due to the selection of 14 listed companies as non traditional electronic information industry, the companies with low financial risk are listed on the basis of big data concept stocks, cloud computing stocks, artificial intelligence stocks and block chain concept stocks. These companies keep pace with the times and cater to the needs of the “Internet + era”.

"Internet +" initiative in financial risk prevention of electronic information industry

First of all, under the "Internet +" environment, the electronic information industry has more resources, such as registered users, software downloads, online traffic and other non-traditional accounting information as the competitiveness of enterprises. Therefore, in this context, enterprises in the electronic information industry should make use of large data technology, the huge amount of data generated in digitization, and the established Z model to link accounting information with unconventional data to reflect the real business situation of enterprises comprehensively and objectively, focusing on the operational capacity of enterprises and reducing financial risk. The probability of being born helps business operators make the right decisions, so as to promote the sustainable development of enterprises, promote the upgrading of electronic information industry, and adapt to the "Internet +" era.

Secondly, there is manual participation in the preparation process of traditional accounting information. Some enterprises will adjust and intervene in financial data for some purposes, which will inevitably increase the possibility of errors, even fraud, and increase the probability of financial risks. In the era of "Internet+", the openness and comprehensiveness of information require more authenticity and accuracy of accounting information. Block chain technology, through encryption and authentication technology and decentralization, can enable each participant of block chain to

establish mutual trust relationship, ensure the security of funds and information through the unalterable unified account system, and increase the trust expectations of various stakeholders. The sample companies such as Ziguang Stock Company and 2345 Stock Company are those with smaller financial risks in the concept stocks of block chain. Making good use of the products of the Internet + era helps to improve the quality and transparency of accounting information, promote the transformation and upgrading of the electronic information industry, and help to reduce the occurrence of financial risks.

Finally, some chemical products produced by electronic information enterprises are highly polluting, so enterprises need to bear the corresponding environmental pollution costs. These non-financial information can better reflect the enterprise's resource allocation, technological innovation, capital input and so on. In order to guard against the financial risks brought by environmental hidden costs, enterprises should take corresponding responsibilities in time. Due to the disclosures of environmental costs in various listed companies are inconsistent, there is no objective data to be measured. Therefore, the financial risk evaluation model established in this paper is only measured by tax contribution rate index in terms of social responsibility. In view of this situation, the relevant departments of the state should formulate relevant laws and regulations, and formulate accounting information standards that meet the government's environmental requirements and business development needs is imminent. Listed companies in the electronic information industry should promote the disclosure of non-financial information such as environmental information in accordance with the characteristics of their products, pay attention to improving their professional abilities such as environmental accounting, and serve the development of green economy. For example, they should adopt the setting or disclosure of accounting books, financial statements and related data to reflect the overall, objective, true and ring. Environmental-related accounting information, rational use of environmental resources, increase the rate of return on assets, product output and other measures.

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