

Research on the Stock Investment Value of Internet Listed Enterprises

Shuang Chen^{1,a}, Kaiyue Zhao^{1,b}, Dan Li^{1,c}, Hongyun Gao^{1,d}

¹ Information and Engineering College of Dalian University, Dalian, 116622, China

^a chenshuang0707@163.com, ^b1343406288@qq.com, ^c279675738@qq.com,

^d gaohongyun@dlu.edu.cn

Abstract. Based on the multivariate statistical analysis method, this paper studies the investment value of Chinese Internet listed companies. Firstly, the factors affecting the investment value of Internet enterprises are analyzed from macro and micro aspects, and the index evaluation system is constructed respectively. Secondly, 90 Internet enterprises are selected and empirically studied by factor analysis and cluster analysis. Finally, four companies with good performance in each field are selected to use ARIMA model to forecast stock prices in the next five days. The results show that Chinese Internet enterprises as a whole have relatively high investment value, and the solvency and future development ability of enterprises have a great impact on the investment value of Internet enterprises.

Keywords: Internet enterprises, value of investment, stock price forecast.

1. Introduction

As of December 2021, the country's Internet penetration rate was 73 percent and the number of Internet users had reached 1.032 billion, up 42.96 million from the same period last year, according to a statistical report on the country's Internet development released in 2022. In recent years, under the guidance of the network power strategy, the Internet industry has achieved a leap of development. The Internet has been widely penetrated into all fields of the economy and society, deeply affecting people's work and life. In the capital market, the Internet listed companies of emerging economies are more and more concerned by investors. However, Internet enterprises are different from traditional enterprises in terms of asset composition, value creation and growth cycle. Therefore, under the new economic model, how to reasonably evaluate the investment value of Internet listed enterprises is of great importance to satisfy the information demands of investors and creditors.

In 1964, William F[1] put forward the Capital Asset Pricing Model (CAPM) to measure the relationship between risk and return, which laid a solid foundation for the development of investment theory. Gamesalingam S and Kumar K[2] used factor analysis to study the panel data of several listed companies, and the results showed that this method has important practical significance for studying the investment value of companies. As the Internet industry is complex and changeable, foreign scholars have studied and selected different evaluation methods for different types of Internet enterprises in the market. Wang[3] used EVA model to evaluate the value of Internet enterprises and verified the accuracy of this model in the process of value evaluation. Peka J[4] takes newly established Internet enterprises as the research object and uses three basic enterprise evaluation methods to evaluate them, finding that newly established Internet enterprises should consider both financial and non-financial factors. With the application of statistics in capital markets, various statistical methods are used to build stock price prediction models, such as multiple regression, ARMA model and other time series methods. Xu[5] used the ARMA model to predict the New York Exchange gold futures price and found that the model had a high short-term prediction accuracy.

The rest of this paper is organized as follows: Section 2 we have established an index evaluation system. Then research on the investment value of Internet listed Enterprises based on factor analysis and cluster analysis in Section 3. Finally, conclusions will be given in Sections 4.

2. Determine the evaluation index system

Internet enterprises in China can generally be defined from two aspects, narrow and broad, narrow Internet enterprises refers to the ownership of domain name derivative services and goods in the network, mainly engaged in the establishment and maintenance of Internet infrastructure business. Internet enterprises in a broad sense refer to enterprises that make profits by producing products and providing services on the basis of network technology, including three layers: base layer, application layer and terminal layer. This paper will take the Internet enterprise as the main research object.

In accordance with scientific, objective and comprehensive principles, this paper selects six indicator types from financial and non-financial factors, as shown in Table 1.

Table 1 Evaluation index system

Index source	Index type	Index name	symbol
Financial factors	Profitability	Return on equity	X_1
		Net interest rate on total assets	X_2
		Net profit margin on sales	X_3
	Debt paying ability	Current ratio	X_4
		Quick ratio	X_5
		Asset liability ratio	X_6
		Equity ratio	X_7
	Operation ability	Receivables Turnover Ratio	X_8
		Current asset turnover	X_9
		Total asset turnover	X_{10}
	Growth ability	Operating income growth rate	X_{11}
		Operating profit growth rate	X_{12}
		Total Assets Growth Rate	X_{13}
Non financial factor	R&d innovation capability	Proportion of technical and R&D personnel	X_{14}
		Proportion of R&D expenses	X_{15}
	Human capital	Bachelor's degree or above	X_{16}

3. Research on Investment Value of Internet listed Enterprises based on factor analysis

In this paper, Internet-related listed enterprises in information transmission, software and information technology services (I) category were selected from the industry classification results of listed companies in the third quarter of 2021 by China Securities Regulatory Commission. We use Oriental Fortune software to select four dimensions to evaluate the investment value of Internet listed companies, and determine 90 Internet listed companies as samples.

The KMO test and Bartlett test were conducted on the index data, and the KMO test value was 0.733 and the Bartlett test result was 0, which indicated that the sample was suitable for factor analysis. It can be seen from Table 2 that the cumulative variance contribution rate of the first six

common factors reaches 82.877%. Therefore, this paper selects six common factors to evaluate the stock investment value of Internet listed companies instead of the original indicators.

Table 2 Total variance explanation

Composition	Total	Initial Eigenvalues % of Variance	Cumulative%
1	4.996	31.227	31.227
2	2.853	17.830	49.057
3	1.871	11.694	60.751
4	1.424	8.902	69.653
5	1.103	6.891	76.544
6	1.013	6.333	82.877

Of six common factor and the relationship between the original data index analysis, we can see that the extraction of six common factor with 16 initial indicators of load to distinguish clearly enough, not well factor classification, so need to rotated component matrix, get the Table 3, the result has a certain degree of differentiation, can be interpreted better probability factor and named.

Table 3 Rotate Component Matrix

	Composition					
	1	2	3	4	5	6
X_1	0.104	-0.021	0.957	0.157	0.004	-0.028
X_2	-0.160	0.065	0.948	0.162	0.064	-0.009
X_3	-0.566	0.129	0.594	-0.262	-0.062	-0.055
X_4	-0.359	0.893	0.015	-0.095	0.021	-0.075
X_5	-0.370	0.890	0.023	-0.079	0.006	-0.074
X_6	0.798	-0.451	-0.087	0.057	-0.116	-0.082
X_7	0.786	-0.309	-0.091	0.003	-0.151	-0.124
X_8	-0.186	-0.046	0.022	0.860	-0.177	-0.125
X_9	0.497	-0.142	0.227	0.701	-0.020	0.264
X_{10}	0.568	-0.034	0.240	0.694	0.003	0.139
X_{11}	0.336	0.146	0.250	0.353	0.569	0.349
X_{12}	-0.046	-0.108	-0.067	0.017	-0.020	0.911
X_{13}	0.077	0.896	0.045	0.018	0.019	-0.022
X_{14}	-0.218	-0.028	-0.022	-0.262	0.753	0.093
X_{15}	-0.777	0.022	0.045	-0.057	0.236	-0.103
X_{16}	-0.352	0.034	-0.015	-0.031	0.693	-0.284

From Table 3, we can see that the first common factor has a large load on the three variables of X_6 , X_7 and X_{15} . It shows that the enterprises with higher R&D investment have stronger long-term debt repayment ability. The reason is that the enterprises with higher R&D investment can develop new products faster, have stronger value realization ability, and have stronger risk resistance ability in the long run. Therefore, it is named as risk resistance ability factor. The second common factor in the X_4 , X_5 and X_{13} three variables has a bigger load, this is because the asset is the security of the enterprise to repay the debt, the increase of capital will increase the liquid level of enterprises, and enterprises can repay the debt level is also higher in the short term, so it can

be named as short-term debt paying ability factor. Similarly, according to the results of factor rotation, the third to sixth common factors are respectively named as profitability factor, operational ability factor, growth and R&D factor and development ability factor.

In the process of using factor analysis to construct public factors through original indicators, the investment value of Internet listed enterprises is mainly affected by six comprehensive factors, namely, anti-risk ability factor, short-term debt paying ability factor, profitability factor, operating ability factor, growth and R&D factor, and development ability factor.

In the process of analysis, it is found that the risk resistance factor and the short-term solvency factor, as the factors mainly related to the short-term and long-term solvency of enterprises, have a great impact on the development of enterprises. While the development ability factor is a separate category of operating profit growth rate, although the contribution of the relative factor is small, it accounts for a very large proportion in the 16 original indicators. Therefore, when making investment decisions, investors should focus on enterprises with strong anti-risk ability and great development potential.

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