

Research on the Construction of a Financial Analysis System for Core Competitiveness of Enterprises

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Abstract: In view of the defect of the traditional financial analysis system that only focuses on the surface data analysis of financial statements and ignores the evaluation of the core capabilities of enterprises, this paper attempts to construct financial analysis indicators for core competitiveness to improve the deficiencies of the traditional financial analysis system. Based on a systematic review and summary of the research literature and development environment of core competitiveness at home and abroad, this paper reconstructs the financial analysis indicator system of core competitiveness from four dimensions: return on human capital investment, R&D innovation ability, cash balance ability, and capital investment return rate. At the same time, the empirical results based on the data of listed companies in Shaanxi Province show that there is a positive correlation between the core competitiveness of enterprises and the four financial analysis indicators, indicating that the constructed indicators have certain rationality and practical value.

Keywords: Core Competitiveness, Financial Analysis System, Construction.

1. Introduction

Core competitiveness is the source and driving force of a company's sustainable long-term competitive advantage, and it is the most core, fundamental, and difficult-to-imitate and replace part formed in the development of an enterprise. The traditional financial analysis system is only limited to the surface data analysis of financial statements. How to effectively quantify and evaluate the core competitiveness of enterprises from the perspective of financial accounting is necessary and urgent. Based on the characteristics of core competitiveness, this paper attempts to construct a scientific and effective financial analysis indicator system for core competitiveness starting from the data of financial statements to deepen the content of financial analysis, optimize the methods of financial analysis, and expand the field of financial analysis. At the same time, the financial analysis system of core competitiveness is introduced into all links and management processes of enterprise operation to explore and innovate the traditional financial analysis theory and methods.

2. Principles for Constructing Core Competitiveness Financial Analysis Indicators

(1) Combination of Importance and Practicality

The principle of importance emphasizes that in the process of constructing core competitiveness financial analysis indicators, the key indicators that can best represent the core competitiveness of the enterprise should be selected to reflect the relevant characteristics to the greatest extent. Practicality emphasizes that this indicator should not only be applicable or reflect the individual characteristics of a single enterprise but should also be widely applicable to evaluate the core competitiveness of enterprises in various industries.

(2) Combination of Systematicness and Targetedness

Systematicness requires an overall grasp, placing the influencing factors of core competitiveness in a system and considering the interrelationships among these factors.

Targetedness, on the other hand, focuses more on the results, that is, the constructed evaluation indicators should as much as possible reflect the strengths and weaknesses of core competitiveness.

(3) Combination of Qualitative Analysis and Quantitative Verification

On the one hand, the indicators should be able to qualitatively determine the level of core competitiveness of the enterprise at the overall level. On the other hand, specific calculations should be made based on the data of financial statements to obtain quantitative analysis results.

3. Construction Content of Core Competitiveness Financial Analysis Indicators

Based on the analysis of three dimensions - quantity, quality and time, the core competitiveness of an enterprise has the characteristics of coreness, leadingness, coordination and dynamics. According to these four characteristics, a specific financial analysis index system for the core competitiveness of an enterprise can be constructed from four aspects: the return on human capital investment, the R&D innovation ability, the cash balance ability and the capital investment profitability.

(1) Construction of the Index for the Return on Human Capital Investment (Coreness)

The operation of any enterprise is controlled and carried out by people, so people have a significant impact on the development of an enterprise to a large extent. Nowadays, human resources, as an important enterprise capital, have increasingly become the object of competition among enterprises. Excellent talent teams and efficient management teams can add extra value to the enterprise and are not easily imitated or replaced by competitors, providing a prerequisite for the enterprise to maintain a long-term good development trend and being an important source of the enterprise's core competitiveness. As the carrier of human capital, people are also the carrier of the enterprise's connotation, innovation and

creation and other intellectual resources, as well as living intangible assets. Therefore, this paper takes human capital as an indicator to evaluate the coreness of the enterprise's core competitiveness. However, due to the current lack of discussion, the theoretical and practical circles have not reached a unified understanding on the evaluation and measurement of human resources at the financial level.

This paper refers to the core indicator of the DuPont analysis system - the net return on equity, and introduces this indicator principle into the research of human resource accounting to construct the human capital investment return rate indicator to quantitatively reflect the core competitiveness of the enterprise. The calculation formula of the human capital investment return rate is: human capital investment return rate = net income from human capital investment / human capital cost = net profit / cash paid to employees and on behalf of employees.

The interpretation of this indicator can be made from two aspects: on the one hand, from the perspective of political economy, the net income from human capital investment is the surplus value created by the labor of workers transformed into enterprise profits, which is the enterprise income formed after the investment in human capital, so the net profit indicator is used to represent the return obtained by the enterprise, that is, the net income from human capital investment; on the other hand, the cash paid to employees and on behalf of employees is the remuneration obtained by employees after a certain amount of labor, and it is also the cost and expense that the enterprise has to pay. From this perspective, the human capital cost can be expressed and measured in the form of employee compensation.

(2) Construction of the Index for R&D Innovation Ability (Leadingness)

The index for R&D innovation ability refers to the ratio of the total of development expenditure and intangible assets to the enterprise's operating income. The calculation formula is: R&D innovation ability = (development expenditure + intangible assets) / operating income.

This indicator reflects another important characteristic of the core competitiveness of an enterprise - leadingness, which can show the proportion of funds invested in technology and product innovation to the enterprise's income, thereby demonstrating the degree of the enterprise's inclination towards R&D innovation. The R&D innovation ability index is mainly applied to new products in the R&D process of the enterprise, the intangible assets already owned by the enterprise and the innovation ability, thereby reflecting the leadingness and imitability of the enterprise's core competitiveness. The higher the value of this indicator, the higher the degree of emphasis the enterprise places on R&D. In the long term, the leadingness of the enterprise's core competitiveness determines its difficulty to be imitated, which is an important prerequisite and necessary basic condition for the enterprise to further consolidate its competitive advantage. Of course, the greater the implicitness, scarcity and particularity of the enterprise's R&D innovation ability, the more obvious the leading degree of the core technology and ability the enterprise possesses, and the greater the difficulty for its competitors to imitate and surpass.

(3) Construction of the Index for Cash Balance Ability (Coordination)

Financially, the coordination characteristic of an enterprise in the production and operation process is generally measured by the level of cash income and expenditure. Cash balance

capacity is reflected as the difference between working capital and working capital demand. The calculation formula is: Cash balance capacity = Working capital - Working capital demand. The calculation result of this indicator is an absolute number value, so the logarithm of the absolute value of the calculation result is taken. The smaller the indicator, the stronger the cash balance capacity.

Where, Working capital = Current assets - Current liabilities, that is, working capital is the difference between the total current assets and the total current liabilities of the enterprise. These differences can be used to invest in non-current assets and repay non-current liabilities. Therefore, if the working capital of an enterprise is positive, it indicates that the enterprise's investment and financing activities are well coordinated, and the financing activities can meet the capital needs of the investment activities; if the working capital is negative, it indicates that the enterprise's investment and financing activities are poorly coordinated, and the working capital is insufficient to support asset investment, or the enterprise needs to borrow new debts to repay old debts, and there are difficulties in capital operation; Working capital demand = (Trading financial assets + Inventory + Notes receivable + Accounts receivable + Prepaid accounts + Other receivables) - (Notes payable + Accounts payable + Advance receipts + Employee compensation payable + Taxes payable + Other payables).

As reflected in its calculation formula, the cash balance capacity indicator is the difference between the funds created or derived by the enterprise itself in its production and operation activities and the funds required for conducting business activities [3]. If the calculation result of this indicator is positive, it indicates that the enterprise's working capital can meet the capital needs for smooth business operations; if it is negative, it indicates that the enterprise's working capital cannot maintain normal production and operation activities, and external financing is needed to solve the cash shortage problem. Therefore, in summary, for an enterprise, a positive or negative, too high or too low cash balance capacity indicator is not the best state. A value of zero is the best, which can ensure that the enterprise does not have a large amount of idle funds and does not experience cash shortages.

(4) Construction of the capital investment return rate indicator (dynamic)

The capital investment return rate is a dynamic indicator reflecting the core competitiveness of an enterprise. As the enterprise changes and develops, its capital scale and profit level are also constantly changing. The improvement of core competitiveness is reflected in the process of enhancing the enterprise's sustainable development ability and is externalized as the profits and returns brought to the enterprise [4].

The calculation formula is: Capital investment return rate = Core profit / Total invested capital = (Operating income - Operating cost - Operating taxes and surcharges - Administrative expenses - Sales expenses - Financial expenses) / (Average balance of share capital or paid-in capital + Average balance of capital reserve).

The acquisition of profits is an important business goal for enterprises and also the ultimate business outcome. With the continuous growth of profits, enterprises simultaneously accumulate capital, obtain financial support for production expansion, and lay an important economic foundation for sustainable development. The higher the value of this indicator, the richer the capital accumulation of the enterprise,

the stronger its sustainable development ability, the greater the development space and potential, and thus further reflecting that the enterprise has a stronger core competitiveness.

4. Empirical Test

(1) Sample Selection and Data Sources

There are a total of 46 listed companies from Shaanxi Province in the Shanghai and Shenzhen stock markets, and the majority of them are manufacturing enterprises. Due to the requirements of the research data, only 35 companies are selected as sample enterprises in this paper, as shown in Table 1.

Table 1. Basic information of sample enterprises

No	Stock Code	Enterprise	Industry
1	600379.SH	Baoguang	Manufacturing
2	600456.SH	Baoti	Manufacturing
3	000561.SZ	Fenghuodianzi	Manufacturing
4	600343.SH	Hangtian	Manufacturing
5	601369.SH	Shaangu	Manufacturing
6	002267.SZ	Shaanxigas	Electricity, heat, gas and water production and supply
7	002149.SZ	Western metal material	Manufacturing
8	600248.SH	Yanchanghuajian	Building industry
9	601179.SH	China Xidian	Manufacturing
10	000768.SZ	Zonghang Airplane	Manufacturing
11	300023.SZ	Baode	Manufacturing
12	600302.SH	Typical	Manufacturing
13	600455.SH	Botong	Comprehensive industry
14	600707.SH	Caihong	Manufacturing
15	300103.SZ	Dagang	Manufacturing
16	000564.SZ	CCOOP Group	Wholesale and retail trade
17	600831.SH	Guangdian	Education, culture and arts, radio, film and television
18	000516.SZ	Guoji Yixue	Wholesale and retail trade
19	300116.SZ	Jianruiwoneng	Manufacturing
20	600984.SH	Jianshejixie	Manufacturing
21	600080.SH	Jinhua	Manufacturing
22	601958.SH	Jinmu	Mining industry
23	000796.SZ	Caissa Tourism	Management of water conservancy, environment and public facilities
24	000697.SZ	Ligeance Aerospace	Mining industry
25	601012.SH	Longji	Manufacturing
26	000837.SZ	Qinchuan	Manufacturing
27	600706.SH	Qujiang Cutural Tourism	Management of water conservancy, environment and public facilities
28	000812.SZ	Shaanxi Jinye	Manufacturing
29	300164.SZ	Tong Petrotech Inc	Mining industry
30	000610.SZ	Xi'an Tousiam	Management of water conservancy, environment and public facilities
31	000721.SZ	Xi'an Yinshi	Hotels and catering services
32	300114.SZ	AVIC ZEMIC	Manufacturing
33	600893.SH	AECCAERO ENGINE	Manufacturing
34	300140.SZ	Zhaonghuanzhuangbei	Manufacturing
35	600217.SH	Zhongzaizhuan	Manufacturing

(2) Descriptive Statistical Analysis

Descriptive statistical analysis of the calculated indicators of the sample enterprises can roughly understand the situation

of each enterprise's employee creation of core profits, cash coordination status, realization status of invested capital value, and whether it has sustainable innovation capabilities, etc.

Table 2. Descriptive Statistical Values of Each Variable

	Y?	X ₁	X ₂	X ₃	X ₄
Mean	1.805755	0.336183	0.148508	19.70823	0.081319
Median	1.298263	0.263116	0.080386	19.63660	0.059942
Maximum	10.61533	8.497787	5.260640	23.11574	1.271869
Minimum	0.130904	-17.53358	0.001665	15.13739	-0.253507
Std. Dev.	1.628462	1.831515	0.406250	1.569570	0.165462
Observations	175	175	175	175	175
Cross sections	35	35	35	35	35

5. Core Competitiveness Ranking of the 35 Companies

This paper uses the human capital investment rate of return,

R&D and innovation ability, the cash balance ability and return rate on capital investment as independent variables to reflect four basic characteristics of enterprise core competitiveness, and leverage asset to market value ratio as

the dependent variable to quantitative reflect enterprise's core competitiveness. In Table 8 according to the value of assets ratio, the 35 listed companies' core competitiveness is ranked by average index value of the five years from 2015 to 2025.

The greater the value is, the enterprise core competitiveness level is higher. The average values of the four basic financial indicators are listed in turn.

Table 3. Ranking of core competitiveness 2015-2025

Ranking	Company	Asset to market capitalization ratio (average)	Human capital investment rate of return (average)	R&D and innovation ability (average)	Cash balance capacity (average)	Return rate on capital investment (average)
1	Ligeance Aerospace	8.030104	4.102374	1.206419	19.538444	0.108971
2	Baoguang	4.701544	0.185205	0.003522	17.166472	0.108938
3	Fenghuodianzi	2.720865	0.217936	0.066484	19.455556	0.117865
4	Broadcom shares	2.704329	0.111277	0.282307	18.495959	0.031523
5	Xi'an Tousiam	2.671104	0.087953	0.086670	18.890012	-0.046550
6	Xi'an Yinshi	2.587755	0.022870	0.065353	18.668101	-0.013910
7	Dagang	2.567750	1.954385	0.048323	20.174587	0.097499
8	Jinhua	2.463363	0.710171	0.087556	18.661888	0.065768
9	Caissa Tourism	2.304849	0.336238	0.048850	19.234677	0.166345
10	Astropulsion	2.194449	0.415344	0.088557	20.126176	0.039866
11	Zhongzaizhuan	2.109642	0.020845	0.222402	19.696163	0.407055
12	Shaanxi Jinye	2.028266	0.513519	0.228410	18.892028	0.167640
13	Jinmu	1.810158	0.303708	0.159147	22.078861	0.027192
14	AVIC ZEMIC	1.686177	0.423154	0.096646	19.671101	0.136149
15	Quijiang Cutural Tourism	1.674383	0.259983	0.154125	18.080147	0.113285
16	Tong Petrotech Inc	1.601552	0.378830	0.047142	19.729044	0.016990
17	Typical	1.538627	-0.027409	0.148767	19.663076	-0.063254
18	Zhaonghuanzhuangbei	1.457385	0.254570	0.188473	19.438421	0.056478
19	Shaanxigas	1.364431	1.902264	0.050688	19.689430	0.274145
20	Jianshejixie	1.298059	-0.486002	0.052677	16.562404	-0.019495
21	AECCAERO ENGINE	1.295433	0.213691	0.080295	20.865716	0.097368
22	Zonghang Airplane	1.251715	0.087446	0.026979	21.042418	0.036341
23	Guoji Yixue	1.169015	0.721578	0.092537	19.909782	0.232116
24	Guangdian	1.131510	0.237473	0.032600	19.121753	0.128455
25	Baoti	1.076119	-0.060201	0.054179	20.279950	0.007636
26	Longji	1.026068	0.760483	0.042693	20.754480	0.149778
27	Caihong	0.931718	-5.050036	0.518550	20.257026	-0.071543
28	Baode	0.879863	0.831458	0.261954	19.667999	0.047830
29	Qinchuan	0.841792	-0.113104	0.091844	17.948867	-0.097214
30	Shaangu	0.823337	1.053449	0.042845	22.484726	0.189396
31	China Xidian	0.798622	0.354634	0.134090	22.883695	0.035614
32	Jianruiwoneng	0.693664	0.379770	0.225318	19.198651	0.048391
33	Yanchanghuajian	0.680674	0.338282	0.014742	20.224774	0.254130
34	Western metal material	0.599252	0.052896	0.177059	19.993492	-0.057394
35	CCOOP Group	0.487843	0.271371	0.069560	21.242345	0.052766

6. Research Conclusions

From the statistical results in Table 2, Table 3, it can be seen that:

(1) The asset market value ratio (Y) reflects the relationship between the annual total market value and the total assets, and generally indicates the core competitiveness of the enterprise. There is a significant gap between the maximum and minimum values. Due to the gradual change in the business goals and value pursuits of enterprises in recent years and the reform of the market system, the growth rate of enterprise value has accelerated, and the asset market value ratio has

shown an upward trend.

(2) The return on human capital investment (X1) has the most significant fluctuation over the five-year period, with a relatively high overall level, which can well reflect the core characteristics of the enterprise's core competitiveness.

(3) Regarding the R&D innovation capability (X2), the average of manufacturing enterprises in listed companies in Shaanxi Province has remained stable at around 14.9%, and has shown an increasing trend year by year. The maximum value is 5.260640, but the minimum value is close to 0. This indicates that China is still in a difficult historical process of transforming from "Made in China" to "Created in China", and there is still a long way to go and many difficulties to

overcome in improving and enhancing the independent core R&D capabilities.

(4) The cash balance ability indicator (X3) reflects the relationship between the working capital and the working capital demand of the enterprise. Due to the particularity of the calculation method, the overall value of this indicator is relatively large, with an average value stable at around 19, which can reflect the coordination characteristics of the core competitiveness.

(5) The capital investment return rate (X4) reflects the relationship between the invested capital and the core profit of the enterprise, and indicates the level of the enterprise's sustainable profitability. The data shows a positive and negative interlaced state, with an average value stable at around 8%, which truly reflects the actual profit situation of the enterprise.

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