

Research on the Financial Value of Relationship Capital based on the Case of SAIC

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Abstract

Based on the goal of measuring the financial value created by relationship capital and after combing the existing research, a quantitative index system has been established to systematically summarize the path of the enterprise relationship capital creating financial value. The empirical results based on SAIC group show that: Tobin's Q of SAIC group in the recent 4 years is greater than 1 with an increasing trend, that is to say, its market value exceeds the book value; relationship capital and enterprise value are positively related. Among them, social and horizontal relationship capital play a more significant role in enhancing the enterprise value, followed by vertical relationship capital, horizontal relationship capital and employee relationship capital.

Keywords

Relationship Capital; Financial Value; Tobin's Q.

1. Introduction

When capital was first put forward, it was only referred to physical capital or the equivalent like machinery and money. In the 1950s, the proposal of human capital, which was compared to material capital and called "immaterial" capital, greatly enriched the category of capital, believing that economic development was related to both the quantity and quality of laborers[1]. Furthermore, the concept of capital and related fields were expanded again: the term "social capital" appeared in the field of sociology, "organizational capital" was put forward in the field of organizational behavior, and "intellectual capital" was put forward in the field of management. It was in this context that "Relationship capital" was put forward, which studies the social network resources of enterprises as a kind of capital, creating a new perspective for the formulation of enterprise strategies. It is another expansion of capital theory after human capital, but so far a unified and authoritative definition of relationship capital hasn't been formed in the theoretical circle. Combined with relevant literature, the author believes that enterprise relationship capital belongs to a unique resource that is established and prepared for long-term maintenance between individuals or organizations of enterprises, as the subject of behavior, and their stakeholders so as to achieve specific goals. It covers five levels: first, the subject of the relationship can be individuals of the enterprise, or on behalf of the enterprise; Second, the stakeholders are referred in a broad sense, including its alliance partners, customers, government and so on. Third, the relationship is set up for obvious purposes, like obtaining scarce external resources and achieving long-term cooperation with alliance partners, acquiring customer loyalty and stable profit sources with customers, and getting political support and protection from the government. The fourth is to prepare for long-term maintenance, which requires that the relationship must be mutually beneficial and trusting. Fifth, as a special resource, relationship capital is difficult for other enterprises to imitate and it requires investment in proprietary assets.

2. Construction of an Index System Measuring the Financial Value Created by Relationship Capital

By systematically summarizing the existing research literature, this paper has constructed a four-dimensional index system to measure the capital financial value created by relationship capital, which is shown in Table 1.

Table 1. The index system measuring the financial value created by relationship capital

Relationship capital dimension	Index	Code	Explanation
Internal	Employee salary rate	RC ₁	Employee compensation / gross gross revenue
	Executive salary rate	RC ₂	Executive compensation / gross revenue
	Return on equity	RC ₃	(After-tax profits - preferred stock dividend) / shareholders' equity
Vertical	Customer loyalty	RC ₄	Top five customers' sales revenue / main business revenue
	Sales growth rate	RC ₅	(Current year's sales - last year's sales) ÷ last year's sales
	Supplier dependency, (excluding related parties)	RC ₆	Purchase cost of the top five suppliers / the total purchase amount of the company
Horizontal	Number of cooperative enterprises	RC ₇	Number of major non-supplier strategic cooperative enterprises
	Cooperation contribution	RC ₈	The percentage of the vehicle joint ventures among SAIC, Volkswagen and GM in China in the global sales of Volkswagen and GM
Social	Government subsidy rate	RC ₉	Government subsidy increase in the current period / total profit
	Bank-enterprise cooperation	RC ₁₀	Cash obtained by borrowing money / overall fundraising
	Industry-university-research cooperation	RC ₁₁	Industry-university-research funds / R & D expenditures

Given that the relationship capital is difficult to measure as an intangible capital, variables are selected to replace those data that are not easy to obtain. Take customer loyalty and supplier dependence as the example[2]. The data of these two abstract indicators are usually acquired through questionnaires, but the design defects and data processing errors can also lead to data distortion. In economic practice, the top five customers are the most valuable customers for an enterprise, and the top five suppliers are the most reliable sources of supply[3]. The proportion is directly related to the future sales and procurement costs of the enterprise. To some extent, it can reflect the enterprise's competitive advantage in future business activities. Therefore, this paper selects the proportion of top five customers in the business revenue and the proportion of top five suppliers' purchasing cost in the whole procurement cost as the replacement for these two indicators.

3. Empirical Test

3.1 Sample Selection and Data Source

There have been lot of literature that have conducted empirical studies on the role of relationship capital of high-tech enterprises[4], but the study on the manufacturing enterprise, which is known as the pillar of the real economy, is rather few. Therefore, Shanghai Automobile Group Co., Ltd. (hereinafter referred to as "SAIC") is taken as a case study in this paper. The company was chosen for the following reasons: first, as a state-owned holding group, SAIC has self-evident capital energy in government relations under the socialist market economy system; second, the company has been ranked among the top three in China's manufacturing industry for several consecutive years, which can be said to be the leader of Chinese automobile manufacturers. Therefore, the selection is of certain representativeness and persuasiveness.

According to Table 1, the relevant data from 2016 to 2020 are selected to verify the direction and degree of impact of relationship capital on the value of manufacturing enterprises. The main sources of data are the official website of SAIC, Eastmoney.com and CCER economic and financial database. Excel and SPSS 26.0 are adopted for data analysis.

3.2 The Key Financial Indicators of SAIC

Table 2. Key Financial indicators of SAIC Group

	2016	2017	2018	2019	2020
current ratio	1.25	1.19	1.05	1.11	1.00
quick ratio	1.08	0.99	0.90	0.99	0.87
Asset-liability ratio: (%)	56.71	55.41	58.78	60.20	62.39
Gross profit margin(%)	12.84	12.36	11.42	12.87	13.47
Operating profit margin (%)	7.10	6.40	6.50	6.42	6.22
Return on Total Assets	10.30	9.70	8.65	7.98	7.17
Days sales of inventory	20.48	22.84	23.35	20.56	21.11
Accounts receivable turnover days	11.08	11.47	13.62	14.47	13.71
Total Assets Turnover(times)	1.64	1.60	1.45	1.37	1.33
Growth rate of operating profit (%)	2.13	0.38	8.06	11.11	11.72
Basic earnings-per-share growth rate (%)	19.55	12.76	6.50	7.43	1.93
Tobin's Q	0.98	1.12	1.04	1.04	1.13

Table 2 shows that the overall solvency and profitability of SAIC have declined in the past five years. And the decline in its profitability is related to the overall automobile market in China, while the decline in its solvency is that the profit is not sufficient for the current operation so that the loan has been added. Besides, its increasing investment in R&D is also one of the main reasons for its increased borrowing.

For China's automobile industry, the average inventory turnover days from 2016 to 2020 were 151.15, 93.2 and 61.84 respectively. Accounts receivable turnover days were 22.82, 8.24 and 6.03 respectively. The total asset turnover rates were 0.25, 0.44 and 0.64 respectively[4]. Compared with the industry's average level, the operating capacity of SAIC is relatively excellent and stable.

3.3 Pearson Correlation Analysis of Relationship Capital and Enterprise Value of SAIC Group

The results of correlation analysis between relationship capital and enterprise value of SAIC are as follows:

Table 3. Correlation analysis results of relationship capital and SAIC's intrinsic value

	RC ₁	RC ₂	RC ₃	RC ₄	RC ₅	RC ₆	RC ₇	RC ₈	RC ₉	RC ₁₀	RC ₁₁
Enterprise value	.347	.078	-.395	-.416	-.360	-.197	.838	.581	.237	.067	.627

*.The correlation was significant at the 0.05 level (double-tailed)

**The correlation was significant at the 0.01 level (double-tailed)

It can be seen that the correlation between SAIC's relationship capital and its intrinsic value is not particularly strong, indicating that there is still a lot of room for optimizing the value of its relationship capital. To be specific, its horizontal relationship capital and social relationship capital have a relatively obvious positive effect on promoting the enterprise value, followed by internal relationship capital. And the horizontal relationship capital can reduce the enterprise value[3].

3.4 Regression Analysis

3.4.1 Factor Analysis

In this study, 11 indicators were selected to measure the relationship capital of SAIC group. In spite of a large amount of information provided by these indicators, the information reflected can sometimes be overlapping, thus causing deviation to the accuracy and reliability of information fitting. Therefore, before the regression analysis, the dimension of the selected indicators should be reduced first, and the unrelated comprehensive indicators should be selected to prepare for the subsequent multiple regression.

The related indicators of SAIC from 2016 to 2020 are selected and the factor analysis results are shown to be non-positive definite matrix by using SPSS26.0. The main reason for this result is that this paper only selects SAIC group as the sample, but there are 11 indicators. However, we only extract the part with large eigenvalues as the common factor, so the influence of the non-positive definite matrix on the result analysis is ignored here.

Table 4. Table of variable communalities

	Initial	Extracted
RC ₁	1.000	.972
RC ₂	1.000	.983
RC ₃	1.000	.998
RC ₄	1.000	.991
RC ₅	1.000	.805
RC ₆	1.000	.971
RC ₇	1.000	.762
RC ₈	1.000	.960
RC ₉	1.000	.956
RC ₁₀	1.000	.926
RC ₁₁	1.000	.998

As can be seen from the above table, the variable communalities of the factor analysis are extremely high, indicating that most of the information in these indicators can be advanced by the factor. It proves that the factor analysis results are effective.

Table 5. Factor contribution rate table

Component	Initial eigenvalue			Rotation Sums of Squared Loadings		
	Total	% Of the variance	Accumulative total%	Total	% Of the variance	Accumulative total %
1	6.944	63.580	63.580	6.944	63.580	63.580
2	1.781	16.190	79.770	1.781	16.190	79.770
3	1.547	14.065	93.835	1.547	14.065	93.835
4	.678	6.165	100.00			
5	3.312E-16	3.011E-15	100.00			
6	2.273E-16	2.067E-15	100.00			
7	1.587E-16	1.442E-15	100.00			
8	3.019E-17	2.744E-16	100.00			
9	-7.195E-17	-6.541E-16	100.00			
10	-1.4488E-16	-1.317E-15	100.00			
11	-2.181E-16	-1.982E-15	100.00			

From the above table, the eigenvalues of the first three factors are greater than 1, and the sum of their eigenvalues accounts for 93.835% of the total eigenvalues. Therefore, the first three factors should be extracted as the main factors to achieve dimension reduction. The three extracted factors are represented as Y1, Y2 and Y3 respectively.

Through the analysis of the rotation component matrix, it can be concluded that employee salary rate RC1, executive salary rate RC2, return on equity RC3, supplier dependence RC6, cooperation contribution RC8 and bank-enterprise cooperation RC10 have a larger load on factor 1, while customer loyalty RC4, number of cooperative enterprises RC7, industry-university-research cooperation RC11 have a larger load on factor 2. And the sales growth rate RC5 and government subsidy rate RC11 has a large load on factor 3.

Table 6. Rotation component matrix

	Component		
	1	2	3
RC ₁	-.905	-.345	-.187
RC ₂	.785	.267	.544
RC ₃	.920	.381	-.077
RC ₄	.456	.856	.225
RC ₅	-.071	.269	-.853
RC ₆	.952	.254	.025
RC ₇	-.507	-.703	.104
RC ₈	-.892	-.337	.224
RC ₉	-.025	.538	.816
RC ₁₀	.941	.062	.189
RC ₁₁	-.222	-.972	.055

Table 7. The component score coefficient matrix

	Component		
	1	2	3
RC ₁	-.177	.033	-.050
RC ₂	.143	-.058	.255
RC ₃	.186	-.009	-.099
RC ₄	-.068	.325	.073
RC ₅	-.041	.183	-.479
RC ₆	.218	-.083	-.039
RC ₇	.004	-.248	.106
RC ₈	-.194	.019	.178
RC ₉	-.164	.249	.434
RC ₁₀	.250	-.185	.059
RC ₁₁	.149	-.446	.076

According to the above table, the linear relationship between the 3 factors and the 11 indicators is as follows:

$$Y1 = -0.177RC_1 + 0.143RC_2 + 0.186RC_3 - 0.068RC_4 - 0.041RC_5 + 0.218RC_6 - 0.004RC_7 - 0.194RC_8 - 0.164RC_9 + 0.250RC_{10} + 0.149RC_{11}$$

$$Y2 = 0.033RC_1 - 0.58RC_2 - 0.009RC_3 + 0.325RC_4 + 0.183RC_5 - 0.083RC_6 - 0.248RC_7 - 0.019RC_8 - 0.249RC_9 - 0.185RC_{10} - 0.446RC_{11}$$

$$Y3 = -0.05RC_1 - 0.255RC_2 - 0.099RC_3 - 0.073RC_4 - 0.479RC_5 - 0.039RC_6 + 0.106RC_7 + 0.178RC_8 + 0.434RC_9 + 0.059RC_{10} + 0.076RC_{11}$$

3.4.2 Multiple Linear Regression

Regression analysis can determine the quantitative relationship of interdependence between multiple related variables and help researchers accurately master the influence degree and direction of independent variables on dependent variables. Based on the above analysis of dimension reduction, the three main factors are taken as independent variables and the enterprise value is treated as the dependent variable to conduct linear regression analysis and quantify the contribution of relationship capital to the enterprise value. The model is obtained:

Tobin's $Q = -0.11Y_1 - 0.040Y_2 + 0.036Y_3$, and $R^2 = 0.680$, which indicates that the significant degree between each dimension of SAIC's relationship capital and its value is 68%.

Table 8. Summary of relationship capital and enterprise value models

R	R ²	R ² after adjustment	The error of the standard estimate	Durbin-Watson
.825 ^a	.680	-.279	.07560	3.435

a. Predictor variables: (constant), Y1, Y2, Y3

Table 9. Anova^b

	Quadratic sum	Df	Mean square	F	Sig.
Regression	.012	3	.004		
Residual	.006	1	.006	.709	.679
Amount to	.018	4			

b. It is significant at the 0.5%.

It can be concluded from the significance of the above table that the model is not significant, which can be attributed to the fact that there are too many data periods and indicators selected for this sample enterprise.

4. Conclusion

1. Tobin's Q of SAIC in the recent 4 years is greater than 1 with an increasing trend, that is to say, the market value exceeds the book value, indicating that external investors are optimistic about the sustainable development of SAIC group. If this part of the difference is seen as the value contribution of relationship capital, it indicates that SAIC's current relationship partners bring it more benefits than costs, which can boost the enterprise value. The sample company should maintain and operate the existing relationship capital so that it can continue to play the role of value contribution.

2. According to the analysis of correlation and linear regression, SAIC's horizontal relationship capital and social relationship capital are most significantly related to its enterprise value, followed by the internal relationship capital. And the vertical relationship capital is negatively related to its enterprise value. The main reason may include the insufficient empirical analysis design and the current condition of China's manufacturing industry, especially the automobile industry.

3. There is a positive correlation between relationship capital and enterprise value, and the contribution vary from dimension to dimension. Social relationship capital and horizontal relationship capital play a more significant role in promoting enterprise value, followed by vertical relationship capital, horizontal relationship capital and employee relationship capital.

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