

An Empirical Test of the Impact of Intangible Assets on Enterprise Performance of Chinese Social Services Listed Companies

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Abstract The data of Shanghai and Shenzhen stock market listed companies in various industries in China during 2003-2008 are selected in this paper. The authors compare the situation of intangible assets in different industries, and find that companies in different sectors of the amount of intangible assets are significantly different. Excluding the impact of scale of the company, we use intangible assets to total assets ratio of the relative amount of target. On the whole, the indicator of social services is higher than other companies. And then, selected 34 social service listed firms between 2003-2008 tests of intangible assets of the business performance. The results show that, the intangible assets of current social services listed company's impact on the business performance insignificantly.

Key words Social services; Intangible assets; Enterprise performance; Empirical test

1 Introduction

Intangible assets typically include patents, non-patents, trademarks, copyrights, franchises, land use right and so on. But by far, the definition of intangible assets is in dispute. This intangible data are selected from CCEER database intangible items, not including goodwill.

From the mid 20th century, with the rise of business forms of concession granted, franchising, OEM etc, intangible assets plays a significant role in enterprise daily operation and expansion, and obtain steady profits for the enterprise. For example: Microsoft's control the global software market by their intangible assets such as trademark rights and software copyrights ;because of its trademarks, recipes and a unique brewing method , State Liquor Mao-tai also create significant value.

The thesis of "In today's wealth and economic growth is mainly driven by intangible assets" (Lev, 2001) has been generally recognized. Companies of various industries have also increased investment and development of intangible assets. Since the reform and opening up of China, service industry developed rapidly. During the 30 years of reform and opening up, more than 10% average annual growth rate of service, higher than the gross domestic product growth. The emergence and development of services is the inevitable result of social progress, economic development and technological innovation. Along with the continuous adjustment of industrial structure, the proportion of service sector in the national economy will be growing. In this context, the study of the intangible services is important.

2 Literature Review

Western scholars related to a lot of empirical research on correlation of intangible assets and market value, disclose the information about them, and got some useful conclusions as follows.

Itami: intangible assets, such as the specific technology, consumer information, brand, reputation and corporate culture are very valuable enterprise competitiveness. In fact, intangible asset is the only resources that can make business with the continued competitiveness (1987, p.1). BelenVillalonga Using a sample of U.S. public companies to study the relationship of intangible resources and sustainable development. Intangible resources are the double-edged sword. For enterprises, intangible resources are a high-risk and high return strategy. Aboody & Lev (1998) Investigated 163 software companies during the period 1987-1995 and found that each capitalized software development costs and stock returns were significantly positive correlation; Hilary Schane (1993) researched 11 semiconductor company's shows that Patent citation rate helps to explain the difference of the Tobin Q among semiconductor companies value. Huselid (1995), Becker and Huselid (1998) through survey found human resource activities and there is a positive correlation between market value. Ittner and Larcker (1998) Studies have shown various forms of customer satisfaction are related to market value. Barth & Clinch (1998) found that there are significant relationship among the revaluation of intangible assets and stock returns and stock price.

Domestic research on intangible assets mainly in the valuation of intangible assets, recognition, content and information disclosure issues in the standardization research, and only few empirical research on the intangible.

Xueyun Kui, Wang ZhiTai (2001) took the Shanghai Stock Exchange-listed stocks as the object of study, investigated the intangible assets on the role of business activities and examine the value relevance of intangible assets. The results show that intangible assets of enterprises have played an important contribution to the business activities and the disclose of the intangible assets of listed companies is significantly positively correlated with stock prices; Liu Bin, Han chuang mo (2009) took Shanghai Stock Exchange listed companies as the research object, examined the performance of intangible assets and related business. The results show that the performance of intangible assets on business contribution is significant, positive; Intangible assets is less than fixed assets for the contribution to business performances; Wan Xiang, Tian Kunru (2006) found that there are significant differences of the amount of intangible assets in different industries among listed companies, the type and proportion of elements are different. Dou Zhibin (2007) researched 27 listed company of auto between 2003-2005 in Shanghai and Shenzhen stock market, test of intangible assets on business performance. The results show that the current listed car company's manufacturer of intangible assets on business performance showed a significant negative correlation.

3 The Relation of Intangible Assets and Business of Listed Companies

3.1 Study design

Without considering whether the recorded value of intangible assets is equal to the actual value, we directly use the book value of the financial statements. We choose Shanghai and Shenzhen stock market A-share listed companies which are listed before January 1, 2002 for the study. In order to maintain continuity, consistency and comparability, we select the data of these companies form 2003 to 2008, excluding "st", "pt" enterprises and companies that replaced main business during this period (the industry). Finally get 973 companies, including A: agriculture, forestry, animal husbandry and fishery; B: extractive industries; C: Manufacturing; D: Electricity, gas and water production and supply; E: Construction; F: transportation, warehousing; G: Information technology industry; H: wholesale and retail trade; J: Real Estate; K: Social Services; L: Communication and Cultural Industries; M: Comprehensive. Intangible assets of listed companies selected descriptive statistics are shown in Table 1.

Table 1 Listed the Ratio of Amount of Intangible Assets to Total Assets the Descriptive Statistics

Year Industry	Sample n	2003	2004	2005	2006	2007	2008
A	18	4.84%	5.26%	6.12%	8.11%	8.86%	8.61%
B	13	5.54%	5.58%	6.19%	4.68%	5.89%	6.93%
C	558	3.26%	3.50%	3.56%	4.11%	4.68%	5.00%
D	49	2.26%	2.33%	2.14%	2.10%	2.98%	3.56%
E	17	2.90%	1.96%	5.51%	4.33%	5.80%	8.03%
F	43	5.33%	6.15%	6.09%	5.88%	7.62%	13.61%
G	50	2.58%	2.05%	2.02%	2.09%	2.53%	3.06%
H	74	3.20%	3.09%	2.89%	2.84%	4.15%	4.50%
J	50	1.90%	2.47%	2.35%	2.82%	1.25%	1.04%
K	34	6.71%	6.54%	6.65%	6.34%	7.33%	10.59%
L	7	4.45%	5.13%	4.27%	3.83%	5.12%	5.21%
M	60	5.36%	4.38%	4.40%	4.18%	4.45%	5.02%

Note: Industry standard according to the first-class industries stipulated by "Classification of listed companies in the industry guidelines" which issued by CSRC, the sample excluding financial and insurance in type 1.

To weaken the impact of firm size, this paper uses the indicator of intangible assets to total assets ratio. Table 1 shows the proportion of intangible assets to total asset of all industries during 2003 to 2008, the ratio of intangible assets to total assets in various industries except J have a larger raise.

Meanwhile, the relative amount of intangible assets between the various sectors is very different. Among them, the proportion of the social services sector is highest during 2003 to 2005, and for the year 2006 to 2008 it is only after maximum value of other industries.

Suppose 1: Does not consider intangible assets accounting problems in practice, such as the accounting treatment of goodwill, research and development costs.

Suppose 2: the higher the level of corporate intangible assets, the greater the company's operating profit.

3.2 Sample selection and data sources

From the industry perspective, social service sector has a larger proportion of intangible assets. According to the companies above, 34 social services companies in service sector are chosen for study, deleted the year in which intangible assets is zero. Sample observations are from CCER database, the National Tai-finance database, hexun network, huge influx of information network. We use spss 17.0, Excel 2003 to do our research.

3.3 Model design and variables explanation

Referring the method used by Xueyun Kui, Wang ZhiTai (2001) to test the contribution of intangible assets of listed companies on operating profit, the paper use the following model to examine the contribution of intangible assets on business performance:

$$OP_{ti} = \alpha_0 + \alpha_1 PPE_{ti} + \alpha_2 INTAN_{ti} + \alpha_3 OP_{(t-1),i} + \alpha_4 CS_{ti} + \alpha_5 ASSET_{ti} + \epsilon_{t,i} \tag{1}$$

OP is as operating profit. PPE is the fixed assets at the end of t year. INTAN is intangible assets at the end of the year of t. CS is the end of the asset liability ratio. It can control capital structure and growth effects. ASSET is log of total assets at the end of the year of t. It can control the impact of size on business performance. t means year, i means company.

3.4 Regression analysis

Table 2 Correlation

		correlation					
		OP	OP _(t-1)	PPE	INTAN	CS	ASSET
OP	Pearson	1	.869**	.632**	.490**	-.149*	.549**
	Significant (bilateral)		.000	.000	.000	.025	.000
OP _(t-1)	Pearson	.869**	1	.651**	.594**	-.163*	.558**
	Significant (bilateral)	.000		.000	.000	.014	.000
PPE	Pearson	.632**	.651**	1	.391**	.058	.629**
	Significant (bilateral)	.000	.000		.000	.389	.000
INTAN	Pearson	.490**	.594**	.391**	1	-.048	.453**
	Significant (bilateral)	.000	.000	.000		.476	.000
CS	Pearson	-.149*	-.163*	.058	-.048	1	.238**
	Significant (bilateral)	.025	.014	.389	.476		.000
ASSET	Pearson	.549**	.558**	.629**	.453**	.238**	1
	Significant (bilateral)	.000	.000	.000	.000	.000	

Table 3 Regression Analysis Result

Model Summary^b

Model	R	R square	Ajust R square	Standard error of estimate	Change Statistics		
					R Square Change	F change	Sig. F change
1	.877a	.769	.763	16396.33613	.769	145.408	.000

Respectively to do regression analysis of each independent variable on performance profit, it shows as following. The correlation coefficient of business operating profit t with operating profit the year before is 0.869, with net fixed assets, the simple correlation coefficient is 0.632, with intangible assets,

the simple correlation coefficient is 0.490, with asset-liability ratio, the simple correlation coefficient is -0.149 and with the natural logarithm of total assets, the simple correlation coefficient is 0.549. Meanwhile the probability P values of them are similar to 0. Operating profit has been positively impacted by the previous year operating profit, net fixed assets, intangible assets and total assets of the natural logarithm and the impact from the previous year operating profit is more than the other indicators. As a model, the Regression Analysis result is as following Table 3.

As can be seen from Table 3, R square is 0.769, adjusted R square is 0.763, so the model fitting is not high.

Table 4 Coefficient
coefficient^a

model		Non-standardized coefficient		Standard coefficient	t	Sig.
		B	Standard error	trial edition		
1	constant	-28921.800	16813.207		-1.720	.087
	OP _(t-1)	.920	.061	.784	15.036	.000
	PPE	.014	.008	.087	1.834	.068
	INTAN	-.023	.018	-.054	-1.308	.192
	CS	-95.791	67.187	-.051	-1.426	.155
	ASSET	2975.029	1496.885	.093	1.987	.048

As can be seen from Table 4, Regression equation is:

$$OPT_i = -28921.80 + 0.014 PPE_{t,i} - 0.023 INTAN_{t,i} + 0.920 OP_{(t-1),i} - 95.791 CS_{t,i} + 2975.029 ASSET_{t,i} + \epsilon_{t,i} \quad (2)$$

For a given significance level of 0.1, operating profit and intangible assets are poorly fitting, as well as and assets-liabilities ratio. The relative coefficient of operating profit and intangible assets is -0.023, It shows a very weak negative correlation. Also, we can see that intangible assets of listed companies in China's social services did not play its enough roles. We also make the further study of data in 2009 and find the indicators as following. R is 0.966, R square is 0.933, and sig value is 0.026. It obviously passes the significance test and shows that intangible assets of social services to enterprises come into play.

4 Conclusions

Through the analysis, we can found that the enterprises operating profit impact on intangible assets is small in social services industry during 2003-2008. There are many reasons can explain this. 1) By far, there is no complete unification of the definition of the intangible asset. So enterprises can not accurately confirm the value of intangible assets, and there are not specific measures to treat various types of intangible assets and capital investment costs; 2) The impact of intangible assets on operating profit may be lagged, and current business intangible assets can not be immediately reflected in the current yield; 3) The use of the land and use rights and housing rights occupy the most of China's listed companies' intangible assets, and the most core competitive intangible assets such as proprietary technology, software, human resources is less; 4) Intangible assets in China listed companies have not fully play the role in enterprise performance, intangible asset utilization is not high and don't achieve the desired effect. And overall, the size of intangible assets of listed companies needs to be improved.

Analyzing the possible problems of intangible assets of the listed companies for the above, we proposed some suggestions as following: 1) Enterprises should maintain the innovative ideas, attention to the introduction, updating and application of intangible assets; 2) Enterprises need to increase investment in intangible assets, and also use existing intangible assets as much as possible into practical productive forces to bring more competitive for enterprises.

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