

THE IMPACTS OF CUSTOMER SATISFACTION ON PROFITABILITY: A STUDY OF STATE-OWNED ENTERPRISES IN CHINA

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ABSTRACT

A growing number of accounting theoreticians believed that non-financial measures can provide incremental information, and multiple performance measures should be applied to Chinese enterprises. However, little empirical evidence is available on the behavior of non-financial measures. Using 2-year data from 78 state-owned enterprises, this study provides evidence on the relationship between non-financial measures and financial performance. The results show that non-financial measure, customer satisfaction, is significantly associated with contemporary and future financial performance. Furthermore, the enterprises with higher-level customer satisfaction than others will enjoy higher profitability by increasing unit profit other than enlarging sales.

Keywords: Non-financial measures, Customer satisfaction, Multiple performance measures, Performance measurement.

1. Introduction

Ever since 1980s, there has been much criticism about traditional performance measurement system which is based on financial measures. Therefore, people have kept exploring appropriate multiple performance measures. Economic theories indicate that, performance measures should include not only financial measures, but also non-financial measures which reflect different aspects of the corporate management activities. According to the Agency Theory (Feltham and Xie, 1994; Banker and Datar, 1989), if non-financial measures can provide incremental information of managers' behavior apart from financial measures, they should be used as a basis for compensation decisions. Hence, whether or not the non-financial measures can provide incremental information has become a common concern among management accountants. An increasing number of articles are discussing about the adoption of a multiple performance measures system with both non-financial and financial measures (Ittner and Larcker 1998, 2001; Amal, Hassan and Benson 2003; Ittner 1997; Keating, A., 1997). Meanwhile, lots of accounting literature is elaborating on the potential advantages of non-financial measures (Kaplan and Norton 1992; Kaplan and Atkinson 1989; McNair et al. 1990). Researchers universally believe that non-financial measures are more future-oriented thus can yield better performance. In an increasing number of companies, the traditional financial measure has been transformed from the unique performance measurement to a part of multiple performance measurement system.

Overseas researches on non-financial measures and financial performance are mainly based on customer satisfaction measures, which attract significant attention from top management in many companies (K. L. Bernhardt, N. Donthu & P.A. Kennett, 2000). This sentiment has been echoed in some surveys of upper-level management (Band, 1988; Quinlan, Zemke, Snider, Reinemunde, Ayling, Singh, Perkins, Antonini, and Loeb, 1991). In a survey of 700 top executives, 64% of them expressed that customer satisfaction was their first priority, and the rest said it was among their top priorities (Shoultz, 1989).

The majority of these studies have examined the association between customer satisfaction measures and financial or stock returns. Studies investigating the link between non-financial measures and future financial performance showed mixed results. From economists' perspective, customer satisfaction is a reflection of products and services inputs (Lancaster (1979) and Bowbrick (1992), but these inputs may not certainly improve a company's performance. To achieve high customer satisfaction, a company always needs heavy investments, which probably lower its profits. For instance, Tornow and Wiley (1991) found a negative correlation between customer satisfaction and gross profits. The study by Foster and Gupta (1997) of the association between satisfaction measures for individual customers of a beverage wholesale distributor and its current or future customer profitability also found positive, negative, or insignificant relations depending upon the questions included in the satisfaction measures or model specification (levels or percentage changes).

However, most research results actually showed that customer satisfaction is significantly associated with current and future financial performance. Such researchers as Nelson, Rust, Zahorik, Rose, Batalden, and Siemanski (1992) have found that this positive relationship exists and it is applied to all profitability measures—earnings, net revenues, and return on assets. Plenty of

empirical research in the last decade showed that customer satisfaction was positively relevant to corporate performance. Anderson et al. (1994) studied the relationships between customer satisfaction and the profitability of Swiss companies. They found that customer satisfaction and ROA (return on assets) are of significantly positive correlation. With the research on customers, operating entities and companies, Ittner and Larcker (1998) discovered that customer satisfaction and future financial performance are highly positively correlated, and that there is evidence showing that the publication of customer satisfaction measure will yield incremental information on stock market. Banker et al. (2000) found the positive correlation between customer satisfaction and financial performance in 18 hotels run by a company. They also discovered that, when non-financial measures were included in the payment contracts, managers would attempt to keep in accordance with these non-financial measures and finally improve the corporate performance.

In the analysis by K. L. Bernhardt, N. Donthu and P.A. Kennett (2000) of a restaurant's 342,308 consumer responses, 3,009 employee responses, and its 12-month performance measures, no significant relationship between customer satisfaction and financial performance was found. But the analysis of time-series data revealed that a positive and significant relationship exists between changes in customer satisfaction and those in the performance of the company. This may show that the impact of an increase in customer satisfaction on profits, although obscured in the short run, is significantly positive in the long run.

The research on multiple performance measures in Chinese enterprises are at the stage of experiments and explorations. In recent years, some Chinese enterprises have introduced non-financial measures to multiple performance measures systems. However, we still lack empirical evidence to prove whether multiple performance measures are suitable for Chinese enterprises, and whether non-financial measures can provide incremental information. Viewed from theoretic analyses and foreign researches, customer satisfaction may bear positive correlation with companies' current and future financial performance, but a few scholars hold that the two may be uncorrelated or even negatively correlated. While in China, there is still room for perfection of market competition and customers are still unaware of their rights protection, which will to some extent impact the role of customer satisfaction. Under these conditions, will customer satisfaction still correlated with corporate financial performance? Therefore, this paper takes 76 state-owned enterprises as research sample and attempts to offer initial answers to this question.

2. Research Background and Data Resource

The performance measurement system in China has its own characteristics compared to those of other countries. It was created to meet the government's needs to manage the state-owned assets rather than to meet the enterprises' needs to manage their own assets. As the owner of SOE, Chinese government developed a series of measures to evaluate managers' performance according to its targets. As the government's targets have transformed, the performance measurement systems changed as well.

Before 1970's, planned economy is carried out in China. The SOE, as only a subsidiary of the government, had little self-determination in decision making. The key performance metrics then were production level, quality, profit, cost, safety, and so on. However, some measures such as profit and cost were not the real indicator of managers' efforts and performance because many decisions were made by the government rather than them.

During 1970's and 1980's, with the opening and reforms policy in China's economy, SOEs gradually became independent economic organizations. And their managers got more freedom in decision making. Although the old planned economy policy still had influence, some measures introduced from western countries began to play a positive role in managing state-owned assets.

In 1992, The General Rules Governing Enterprise Financial Affairs (GRGEFA), a primary performance evaluation system, was issued by Ministry of Finance, in which 8 measures including debt asset ratio, current ratio, quick ratio, account receivable turnover, inventory turnover, return on equity, profit margin and profit on cost were introduced. According to the GRGEFA, Chinese government began to evaluate managers' performance based on profitability, operation capacity and solvency of state-owned enterprises they manage. In 1995, evaluation system of enterprise economic benefits, including 10 measures which were divided into 4 aspects, was issued by the Ministry of Finance. Apart from 3 measures mentioned above, enterprises' contribution to society was considered.

However, these two systems, with only financial measures included, did not work as well in China as expected. There was still much weakness in management over state-owned assets. Meanwhile, the traditional evaluation system based on financial indicators has been widely doubted in the western countries, especially with Balanced Scorecard (BSC) of Kaplan and Norton spreading quickly. Enlightened by BSC, Chinese scholars have been discussing introducing non-financial indicators to Chinese corporate performance evaluation system since late 1990s.

The past decade has witnessed a remarkable improvement of performance measurement systems in China. In July, 1999, the Ministry of finance, SETC (the State Economic and Trade Commission), the Ministry of Personnel and SDPC (the State Development Planning Commission) jointly issued the Rules for State-owned Assets Performance Measurement and the Detailed Rules for State-owned Assets Performance Measurement (DRSAPM). DRSAPM evaluates state-owned Assets from the perspective of profitability, operations of state-owned Assets, solvency and growth potential, respectively. On Feb 22, 2002, the Ministry of finance, SETC (the State Economic and Trade Commission), CWCLE (the Central Work Committee for Large Enterprises), the Ministry of Labor, the Social Security and Ministry of Labor Protection and SPC (the State Planning Commission) revised the evaluation rules, and the number of the performance measures have increased to 28, which are categorized into 3 hierarchies—they

are fundamental, amendatory and evaluating measures, which reflect profitability, operations of state-owned Assets, solvency and growth potential of a state-owned enterprise.

The issuance of Rules for State-owned Assets Performance measurement was a great progress of China's performance measurement system. Different from the traditional unique financial measures systems, the new one included 8 non-financial measures, such as "products' capacity of earning market share".

Based on the revised measurement rules, SASAC-SMG (the State-owned Assets Supervision and Administration Commission of Shanghai Municipal Government) started the annual measurement of parts of the Shanghai state-owned enterprises, in a way of measurement by both external assessment companies and enterprises themselves. We thumbed through the performance measurement reports of 2001 and 2002 and found that, 126 enterprises had presented complete ones in 2001. 55 enterprises in the 126 continued their performance measurement in 2002 because the enterprises who take performance measurement had been chosen at random, so it is possible for us to get their financial performance of 2002. Apart from those, we got the financial performance of another 21 enterprises by reviewing their annual financial reports. Totally, the final sample includes 76 enterprises.

According to the definitions of the 10 industry categories of China's economy in The Basic Classification of Industries for Corporate Performance Measurement, the sample covers 8 competitive industries, that is, one enterprise in the catering industry, 9 in the real estate, 30 in the manufacturing, 2 in the construction, 5 in the transportation and logistics, 17 in the wholesale and retail, 3 in the brokerage & agency and 9 in the social services. We believe that only in the competitive industries is "customer satisfaction" correlated with financial performance. Therefore, this sample meets our selection requirements.

3. Research Hypotheses and Approaches

This paper mainly researches on the correlation between a non-financial measure, products' capacity of earning market share (service satisfaction), and financial measures of Chinese enterprises. Overseas researches such as those done by Anderson et al. (1994) and by Ittner and Larcker (1998), are mainly focused on measuring 'customer satisfaction'. As a performance measure, customer satisfaction can be measured in different ways, like personal interview, telephone interview, questionnaire etc., but the best way theoretically is from customers. Two main factors determine the accuracy of a customer satisfaction measurement (CSM) study. The first is asking the right questions; the second is asking the right people - a sample of customers that accurately represents your customer base (Hill, Brierley and MacDougall, 1999). The sample must be representative, randomly selected and large enough. The questions might be quite different for different companies. For example, a customer satisfaction survey in the Mass Transit Railway Corporation of Hong Kong includes the fares, the level of crowdedness, the information about train delays and the air-conditioning (Megan Walters, 1999). Abdel-Maksouda, Dugdaleb and Lutherc(2005) labeled customer satisfaction as measures of complaints, returns and warranty claims. And the number of complaints received from customers' is classified as a measure of product quality by Chenhall and Langfield-Smith (1998) but as a measure of customer satisfaction by Drury (1996).

While in the Rules for State-owned Assets Performance measurement, the evaluation measure "products' capacity of earning market share" is divided into two aspects-they are products' capacity of earning market share and service satisfaction. In An Notice on the Distribution of Corporate Performance Measures for the Year 2002 by the General Office of Ministry of Finance released on March 25, 2002, the best evaluation measures regarding "products' capacity of earning market share" are as follows: the qualities of the prime products measure up to international standards or arrive at foreign advanced standards and certified by ISO international quality system; leading technical measures come up to the contemporary advanced levels worldwide; the products are universally accepted by consumers and with reasonable performance versus price ratios; marketing networks are sound and marketing strategies successful and effective; the products of large enterprises take a lead in the domestic market share in its industry or nationwide, or attain a 95% production versus sales ratio; the brands enjoy high market reputation and the after-sale services are excellent, the updating speed is high. While the best measures for "service satisfaction" are as follows: the quality of services is superior and approved by honorary certificates of national or provincial level in recent 3 years; the service staff have high quality and amiable and zealous attitude in work, and can meet different demands of customers in time; the products cover a great variety and services are considerate; the pricing is reasonable and all promises made to customers can be strictly fulfilled. Viewed from the two aspects of the measure "products' capability of earning market share", the major contents of "customer satisfaction" are included, so we use this measure to replace "customer satisfaction" (CS) in this research.

Unlike general method of measuring "customer satisfaction" which comes from a large sample survey, the measures here should be graded by more than 5 experts after interviewing managers, analyzing the employee questionnaires and referring to the standards regulated by the Ministry of Finance. Besides, the experts improved some non-financial measures and made them more objective in the performance measurement process.

The "products' capacity of earning market share and service satisfaction" has been divided into 10 detailed measures (shown in Figure 1), that is, (1) product quality, focus on the produce ratio up to grade; (2) service quality, focusing on the level of company's service quality and the award they have got in recent 3 years; (3) the guarantee system of service quality and product quality, focusing on the organization and regulation about the quality management, as well as the implement of them; (4) main technique standards, focusing on the comparison level among the national and international industry, and if it up to par; (5) the brand, focusing on the brand strategy of corporation as well as the reputation of their product brand; (6) customer reaction, focusing on the records

of customer reaction about the service and the times of complaint and praise; (7) marketing strategy, focusing on the strategy and its efficiency of sale; (8) service diversification, focusing on the reasonable structure of service products; (9) pricing, focusing on the pricing policy, and if the price is reasonable; (10) deliver the goods and after service, focusing on the regulation of after service and promise performing.

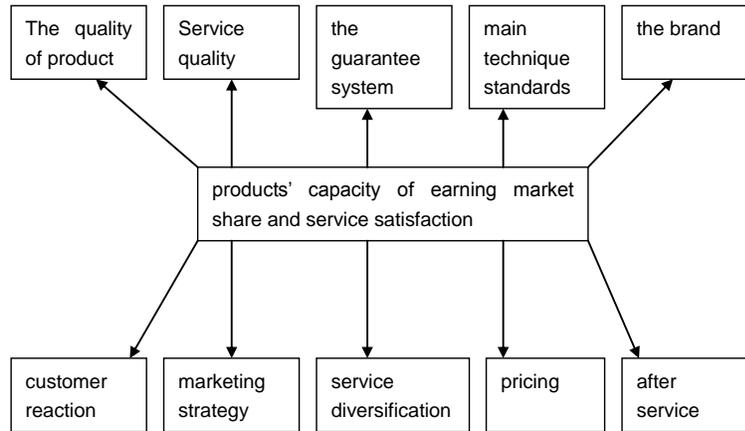


Figure 1. The detail measures of customer satisfaction

In conformity with the research of Anderson et al. (1994), we believe that customer satisfaction of an enterprise is positively correlated with its current profitability. It can be explained in three aspects: firstly, customer satisfaction not only increase customer retention rate but could also attract new customers through “positive word-of-mouth advertising” so as to increase sales. Secondly, customer satisfaction could increase customer loyalty while in turn customer loyalty could decrease transaction expenses and transaction failure costs. Thirdly, customer satisfaction can be viewed as an asset—that is goodwill of an enterprise. According to current accounting standards, this kind of self-created goodwill can not be recognized, but it can yield excessive profits assuredly and thus can promote profitability. We use ROE (return on equity), a generally used financial measure, to reflect the profitability, so we can suppose here, there is significant positive-correlation between ROE and CS.

H1: There is significant positive-correlation between profitability and CS.

Another problem bubbles up to the surface after we have validated whether CS can influence profitability. That is, if CS can influence profitability, then in what ways? According to previous literature, it can be explained from the following aspects in the Figure 2 below:

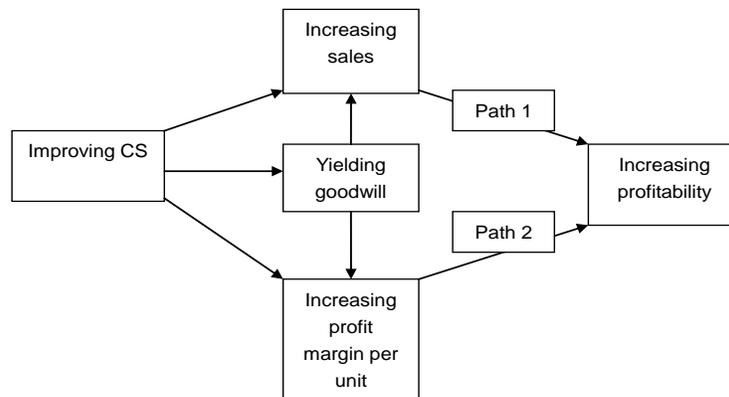


Figure 2. The correlation between CS and profitability

Among the coefficients of sensitiveness concerning profit variance, sales volume is far smaller than unit price and variable costs. So theoretically, it is easier to improve profitability through increasing profit margin per unit than through expanding sales. To validate this, we divide ROE into three ratios and then validate the correlation between return on sales and CS, turnover of shareholders’ equity and CS, respectively.

$$ROE = \frac{\text{netprofit}}{\text{shareholders' equity}} = \frac{\text{netprofit}}{\text{sales}} \times \frac{\text{sales}}{\text{shareholders' equity}}$$

$$= \text{return on sales} \times \text{turnover of shareholders' equity}$$

H2: CS increases profitability through expanding sales and increasing profit margin per unit.

In line with the researches of Ittner & Larcker (1998), We hypothesises that CS is positively correlated with profitability in following periods. It can be explained from the two aspects: increasing sales and decreasing transaction costs. And there are another two reasons: firstly, since CS can be viewed as an asset—that is goodwill of an enterprise, goodwill is sure to bring excessive profits to the enterprise during both current and following periods; secondly, financial measures are usually time-lagged, while non-financial measures can provide timely information of corporate operation. Non-financial measures in previous period can usually predict the financial performance in the next period. In the model, we introduce ROE of the year 2001 (ROE01) as control variable and we believe that ROE in 2002 (ROE02) should be positively correlated with ROE01.

H3: CS can predict future profitability of an enterprise.

4. Definition of Control variables

4.1. Measurement institutions (PJJG)

As indicated in the previous parts, SASAC-SMG started a year-after-year measurement of parts of the Shanghai state-owned enterprises, in a way that measured by both external assessment companies and enterprises group themselves. According to the regulations of SASAS-SMG, for whether measurement by external assessment companies or self-measurement, the measures should be graded by more than 5 experts after considering the results of employee questionnaires and referring to the standards regulated by the Ministry of Finance. So, it is objective to some extent. However, the measures are after all graded by person, are there any differences in the criterion of different person who does the grading? It is completely possible. One possibility is that the external assessment companies are even stricter in grading. As assessment companies are professional organization and external institutions, they may be stricter in measurement. While the managers of the enterprises might just take performance measurement as a formalistic procedure and because they are familiar with the heads of subsidiary companies, they won't give them low grades. The other possibility is that, the company group is stricter in grading. The leaders of the group might consider from the angle that measurement would promote management, thus pose strict requirements on subsidiary companies and their heads. While though assessment companies are external institutions, they are paid by the enterprise itself. So they can not be totally independent because of the "charging problem". On the contrary, if the group measures its subsidiary companies, this problem wouldn't exist. Between the two possibilities, we are inclined to the second because it involves the problem of economic profits. To sum up, we think that the choice of measurement institutions will have significant impacts on the grading of this evaluating measure. So, in order to maintain the objectiveness of research results, we introduce a dummy variable—that is PJJG to represent the choice of measurement institutions. If the measurement institution is external assessment company, we set it as 1; if parent company, 0.

4.2. Enterprise size (LNASSET)

Same as the vast volume of previous researches, we select the natural logarithm of total assets as the control variable of enterprise size. Firstly, enterprises of different sizes might have different profitability. As we consider the relative measures of profitability here, for enterprises with larger size, their ROE might be even lower. Secondly, there might be differences in CS for enterprises with different sizes. Larger Enterprises may be more powerful in increasing investments to promoting CS. Thirdly, the size of enterprise may also has connections with the choice of measurement institutions. For instance, the company group might invite external assessment company to do the measurement of enterprises with larger size, because these enterprises are harder to measure for its large size. So, we should add control variable of "enterprise size."

5. Descriptive Statistics

We list the definitions of all the variables in Table 1 and do descriptive statistics of them to help people understand the process. We can see from Table 1 that the mean of ROE01 and that of ROE02 are close to each other, especially for 11.1882 and 11.9351, only 0.7469 percentage points. The medians of ROE01 and ROE02, 7.83 and 7.25 respectively, are even closer with only 0.58 percentage points variance. It signifies that the economic environment has not changed greatly and so has the average rate of return in the market. Most of the enterprises have a ROE of 7% to 8%. So in the research we would neglect the macro-economic environment factors. However, we find that, the range of ROE02 (192.9) is larger than that of ROE01 (116.77), which marks a worsening polarization in profitability among the 76 enterprises in 2002 against 2001.

Viewed from CS, the highest grade is 16, i.e., full mark, while the lowest is only 9.1, lower than passing mark. It can be concluded that there are big differences in CS for different enterprises. Then, it needs our further research on whether high CS will

give rise to better profitability and whether low CS will lead to poorer profitability. In addition, we notice that, the median and mode of CS are the same, 12.8 (80 percent if according to centesimal system), which means CS for most enterprises is good.

Table 1. The definitions of variables and descriptive statistics

	CS	PJJG	LNASSET	ROE01	ROS01	JZCZZL	ROE02
Definition of variables	Customer satisfaction	Measurement institution	natural logarithm of total assets	Return on equity in 2001 (%)	Return on sales in 2001 (%)	turnover of shareholders' equity	Return on equity in 2002 (%)
Mean	13.3355	0.3289	9.9235	11.1882	0.0822	4.0765	11.9351
Standard error	0.20354	0.05425	0.22535	1.93076	0.02091	1.13117	2.51977
Median	12.8000	0.0000	9.9383	7.8300	0.0422	1.5526	7.2500
Mode	12.80	0.00	5.77(a)	-22.67(a)	-0.66(a)	0.02(a)	1.03(a)
Variance	3.149	0.224	3.860	283.314	0.033	97.246	482.543
Range	6.90	1.00	8.50	116.77	1.52	76.87	192.90
Maximum	9.10	0.00	5.77	-22.67	-0.66	0.02	-28.00
Minimum	16.00	1.00	14.27	94.10	0.85	76.89	164.90

(a) There exist many modes and the listed one is the smallest of them.

6. Analyses Results and Discussions

6.1. Comparison of means in the sampling groups

Based on the statistics of the marks of CS, we find that 18 enterprises get a score of 12.8, 21 get a score lower than 12.8 while 37 get a score higher than 12.8. As shown in Figure 3.

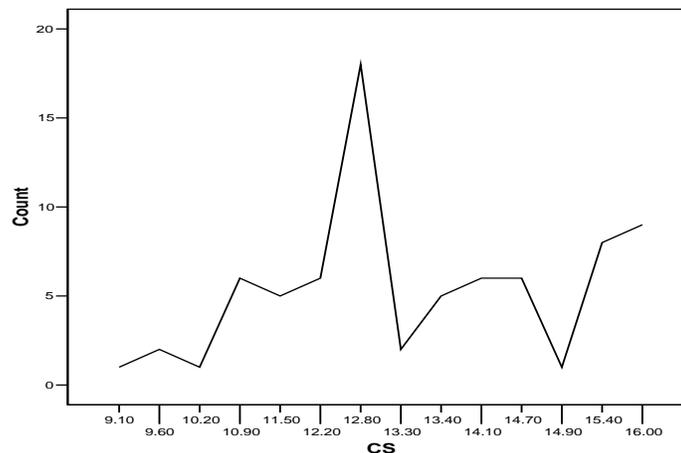


Figure 3. Statistics of the marks of CS

In order to directly reflect the correlation between CS and financial performance, we define those enterprises with a score lower than 12.8 as L-CS sampling group and those with a score higher than 12.8 as H-CS sampling group. And then we compare the means of ROE01, ROS01, ROE02, JZCZZL in these two groups and do T-test on the means. As shown in Table 2.

Table 2. Comparison of means in two sampling groups

	CS level	Mean	Variance of means	t	The value of P
ROE01	H-CS	16.7868	12.4791	3.275***	0.002
	L-CS	4.3076			
ROS01	H-CS	0.1222	0.11197	2.171**	0.034
	L-CS	0.0102			
ROE02	H-CS	18.7527	15.3757	2.413**	0.019
	L-CS	3.3770			
JZCZZL	H-CS	2.3470	-4.28590	-1.166	0.257
	L-CS	6.6329			

We find that, except that means of JZCZZL in the two sampling groups are not significantly different, means of ROE01, ROS01, ROE02 in the two groups are significantly and positively correlated. In other words, the means of ROE01, ROS01, ROE02 are higher in the group with higher CS than that with lower CS. It proves to some extent that CS impacts ROE and CS impacts ROE through impacting ROS rather than the turnover of shareholders' equity. It can be put in another way that, CS improves corporate profitability through increasing profit margin per unit other than expanding sales. Here we preliminarily validate H1, H2 and H3.

6.2. Analyses of correlation coefficients

To further validate the previous hypotheses, we analyze the correlation coefficients of all the variables and do the two-tailed tests. The results are shown in Table 3.

Table 3. Analyses of correlation coefficients of all the variables

	PJG	ROE01	ROS01	JZCZZL	LNASSET	ROE02
CS	0.443***	0.290**	0.265**	-0.138	0.409***	0.322***
	0.000	0.011	0.021	0.235	0.000	0.005
PJG	1	0.208*	-0.024	-0.057	0.253**	0.058
	.	0.071	0.835	0.623	0.027	0.617
ROE01		1	0.334***	-0.016	-0.035	0.803***
		.	0.003	0.889	0.767	0.000
ROS01			1	-0.122	-0.083	0.487***
			.	0.295	0.475	0.000
JZCZZL				1	-0.185	-0.015
				.	0.109	0.897
LNASSET					1	-0.067
					.	0.564

*** Correlation is significant at the 0.01 level (2-tailed).

** Correlation is significant at the 0.05 level (2-tailed).

* Correlation is significant at the 0.1 level (2-tailed).

From the analyses of correlation coefficients of all the variables we could see that, CS has significant positive correlation with the choice of measurement institutions, current-year ROE, current-year ROS, natural logarithm of total assets and the following-year ROE, which is in line with H1, H2 and H3. There is significant positive correlation at the level of 0.01 between CS and the choice of measurement institutions, which indicates that the CS of enterprises who choose an external assessment company to do the measurement is higher than that of those who choose to do self-measurement. CS is correlated with current-year ROS but not significantly correlated with JZCZZL, which signifies that the improvement of profitability (the increase of ROE) is mainly because the increase of CS levels up profit margin per unit and finally improves profitability rather than improving profitability via expanding sales. It is in conformity with H2. CS is significantly and positively correlated with natural logarithm of total assets at the level of 0.01, which represents that enterprises with larger size are usually more powerful and can input more to improve CS, and besides, they enjoy high and good reputation in the industry, which is what we defined as goodwill. So it is no doubt that they will get higher score of CS than other enterprises.

In addition, we notice that there is also significant positive correlation between current-year ROE and the choice of measurement institutions, natural logarithm of total assets and the choice of measurement institutions, respectively. On one hand, it indicates that the company group is inclined to invite external assess companies to do measurement on the subsidiary companies with good financial performance while leave those with relatively poor financial performance for self-measurement. That is what we called "Do not wash your dirty linen in public". On the other hand, enterprises with larger size usually have more sophisticated organizations and businesses so it is more difficult to measure performance. While external assess company are professional measurement institutions so enterprises with large size are inclined to invite external assess companies to do the measurement.

6.3. C. Regression analyses

Based on H1, H2 and H3, we form the following regression models. The regression results are shown in Table 4.

$$ROE_{01} = \beta_0 + \beta_1 CS + \beta_2 PJG + \beta_3 LNASSET \quad \text{Model-1}$$

$$ROS_{01} = \beta_0 + \beta_1 CS + \beta_2 PJG + \beta_3 LNASSET \quad \text{Model-2a}$$

$$JZCZZL = \beta_0 + \beta_1 CS + \beta_2 PJG + \beta_3 LNASSET \quad \text{Model-2b}$$

$$ROE_{02} = \beta_0 + \beta_1 CS + \beta_2 PJG + \beta_3 ROE_{01} + \beta_4 LNASSET \quad \text{Model-3}$$

From Table 4 we could see that, the regression results are completely in line with H1 and H2. CS is significantly and positively correlated with both current-year ROE and current-year ROS but not correlated with turnover of shareholders' equity. Besides, the regression models Model-1 and Model-2a both pass F-test and do not exist the problem of multiple linearity by view from the value of VIF,.

Table 4: regression analyses and the results of T-test

Dependent variables		CS	PJJG	LNASSET	F-Value
ROE01	β	3.019	4.126	-1.663	3.372**
	t	2.429**	0.938	-1.599	
	Sig.	0.018	0.351	0.114	
	VIF	1.41	1.21	1.254	
ROS01	β	0.043	-0.061	-0.020	3.708**
	t	3.248***	-1.278	-1.795*	
	Sig.	0.002	0.205	0.077	
	VIF	1.410	1.254	1.210	
JZCZZL	β	-0.456	0.392	-0.786	0.981
	t	-0.598	0.145	-1.233	
	Sig.	0.551	0.885	0.222	
	VIF	1.410	1.254	1.210	
ROE02	β	2.562	-8.106	-0.904	38.601***
	t	2.516**	-2.325**	-1.084	
	Sig.	0.014	0.023	0.282	
	VIF	1.526	1.270	1.253	

*** Correlation is significant at the 0.01 level (2-tailed).

** Correlation is significant at the 0.05 level (2-tailed).

* Correlation is significant at the 0.1 level (2-tailed).

The result of Model—3 tells us that CS bears significant positive correlation with the second-year ROE. When analyzing the correlation coefficients in the previous parts, we discover that company group is inclined to invite external assessment companies to do the measurement on the subsidiary companies with higher ROE01. While in the regression of ROE02 based on the control variable ROE01, we find negative correlation, which indicates that the company group, who does self-measurement, has to some extent realized the purpose of improving management via measurement. Because the leaders of groups participate in the measurement in person, the problems in management found in the measurement will be solved and in the work of next period, the management will be improved. So the changes of profitability for them are better than those for the enterprises who invite external assessment companies to do the measurement. In addition, both of these two regression model have passed F-test and viewed from the value of VIF there do not exist the problem of multiple linearity.

7. Conclusion

The research confirms that for Chinese SOEs non-financial measures of CS is positively correlated with financial performance. It also shows that those SOEs with higher CS scores enjoy higher profitability. Additionally, SOEs focusing on CS are more likely to improve profitability through increasing unit profit margins rather than by merely expanding sales. It seems that the use of CS measures not only predicts future financial performance but also its changes.

These findings confirm some of the results of the previous research however what is unique in the context of this research and China is that no direct reference has been made to customers although the Chinese model takes a wider approach in interpreting CS. Besides regression used by many researchers, compare mean was used in this study.

Although some literatures have identified the positive association between non-financial measures and financial performance, such as Nelson, Rust, Zahorik, Rose, Batalden, and Siemanski (1992), Anderson, Fornell and Lehmann's (1994), Ittner and Larcker(1998), Yeung and Ennew (2000), Said, Hassan, Elnaby and Wier, (2003), Miguel et al. (2004), this study makes a unique contribution. Different from prior researches generally based on surveys, this study collected its data from the performance reports of Chinese SOEs controlled by the State-owned Assets Supervision and Administration Committee of Shanghai. First, these data are very reliable because we got them from the government where the reports are handed in. Second, there are less noises because the 76 enterprises have same corporate governance. Unlike general methods of measuring “customer satisfaction” which comes from a survey or National American Customer Satisfaction Index (ACSI), the variable “customer satisfaction” here was measured by trained experts after interviewing managers, analyzing the employee questionnaires and referring to the standards regulated by the Ministry of Finance.

Considering two types of measuring institutions involved in performance measurement, a dummy variable PJJG was introduced to models. The results indicate that CS is positively related to the nature of expert organizations, with external experts scoring CS more highly than internal experts. Another control variable, enterprise size, was introduced in the models and indicates

that the size of the target organizations is also positively correlated to CS.

After the positive relationship between Customer Satisfaction and profitability is being found, a further research has been conducted to understand how the Customer Satisfaction influences the profitability. Without considering unit profit margins, Ittner & Larcker (1998) only found the positive relationship between sales and Customer Satisfaction. However, according to management accounting theory, the change of price and direct cost drives profit more sensitively. Therefore, theoretically, compared with the increasing sales, the increasing unit profit margin can play a bigger role in improving profitability. If we split return on equity (ROE) to return on sales (ROS) and turnover of shareholder equity, we can find a significant relationship between customer satisfaction and ROS instead of a significant relationship between customer satisfaction and turnover of shareholder Equity. Although our findings are inconsistent with the findings of Ittner and Larcker, it is supported by the theories of management accounting. Results indicate that corporate profitability is increased via improved unit profit margins rather than increased sales.

This research confirms the significant impact of customer satisfaction on profitability in Chinese State-owned Enterprises. It is an evidence of the necessity of constructing a multiple performance measure system in China.

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