

Market Competition and the Use of Performance Measures in Chinese Firms

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Performance measurement is an important tool for management control for businesses. It is directly related to the formation and maintenance of a firm's core competency and has an impact on the firm's growth and achievement of competitive advantage. Traditionally, firms have primarily used financial measures for these purposes (Kaplan & Norton, 1992). But with the "new" competitive realities of increased customization, flexibility, and responsiveness, many have argued that traditional financial performance measures are no longer adequate. During the past two decades, many firms are seeking a more appropriate performance evaluation system. Among all of these efforts, the combination of both financial and nonfinancial measures in a comprehensive performance measurement system is a well-recognized solution (Ittner & Larcker, 1997, 2001; Van der Stede, Chow, & Lin, 2006).

Since China entered the World Trade Organization

This article shows that use of new performance measures by Chinese firms is a key to maintaining competitive advantage. As competition intensifies, merely cutting price and reducing cost is not necessary a good strategy: Chinese firms need to use an appropriate mix of relevant financial and nonfinancial measures.

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(WTO) in 2001, Chinese firms have faced severe competition from multinational companies. The use of new performance measures by a Chinese firm is a key to maintaining its competitive advantage. In February 2002, in response to the increasing outside competition, five ministries in China (the Ministry of Finance, the National Economics and Trade Commission, the Execution Committee of Large State-Owned Enterprises, the Ministry of Labor and Retirement Insurance, and the National Economics Planning Commission) modified the 1999 regulations to jointly issue the "State-Owned Capital Performance Evaluation Policy." This demonstrated a great improvement in China's performance measurement system, since it

was the first official comprehensive performance measurement system that included both financial and nonfinancial measures. To understand the current practices of performance measurement criteria as well as the effects and types of

performance measures used in Chinese firms, we conducted and analyzed a survey study of 158 firms.¹

The main purpose of this study is to provide some insights into the following questions:

- What are the factors (such as the degree of market competition) that influence firms' choices in selecting a comprehensive performance measurement system?
- Would the adoption of a comprehensive performance measurement system in a firm lead to performance improvement?
- Should a company use more financial measures or nonfinancial measures?

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Published online in Wiley Online Library (wileyonlinelibrary.com).
DOI 10.1002/jcaf.21846

DEGREE OF MARKET COMPETITION

Based on the questions and the measurement methods from prior studies (Hoque & James, 2000; Hoque, Mia, & Alam, 2001; Mia & Clarke, 1999), we generated seven questions that investigate seven aspects of market competition:

1. Market competition environment
2. Product/service technology change frequency
3. New product introduction frequency
4. Number of competitors
5. Pressure on market share
6. Degree of government regulation
7. Degree of price competition

We compute average score in the preceding seven aspects to obtain the degree of market competition.

To guarantee validity of our questionnaire, we use a 6-point scale (i.e., 1 to 6) with the consideration of the unique feature of Chinese Confucian culture, which encourages taking the average. For instance, if we adopt a 5-point scale and 5 is an odd number, respondents would probably choose 3 because 3 is the mean; but if we adopt a 6-point scale, respondents would have to select either 3 or 4, and then we know it's a little bit better or worse than the average.

USE OF FINANCIAL VERSUS NONFINANCIAL PERFORMANCE MEASURES

In our questionnaire, we combine measures from the five Chinese ministries' "State-Owned Capital Performance Policy" measures and Western literature nonfinancial measures

of customer, employees, and product quality to examine the relationship between market competition of Chinese firms and their uses of financial versus nonfinancial measures, as well as their effects on Chinese firms' performance scores.

After considering the prior survey study (Hoque & James, 2000) and China's "State-Owned Capital Performance Policy" measures, this study uses the following nine performance measures:

1. Financial profitability
2. Asset utilization
3. Debt payment ability
4. Revenue growth potential
5. Internal process management
6. Customer satisfaction
7. Product and process quality
8. Employee talent, training, and satisfaction
9. Social contribution

We further break down these nine comprehensive measures into two categories: financial measures and nonfinancial measures. The first four measures are financial measures, while the last five measures are nonfinancial measures.

FIRM PERFORMANCE

We measure a firm's performance with 10 indicators (Ittner, Larcker, & Randall, 2003):

1. Return on equity
2. Gross profit percentage
3. Equipment utilization rate
4. Assets turnover rate
5. Debt-paying ability
6. Customer satisfaction
7. Employee satisfaction
8. Product quality
9. Social contribution
10. Defect product return rate

The first five indicators are financial measures, while the last

five indicators are nonfinancial measures.

SURVEY RESULTS

Our survey results are presented in Exhibit 1. It shows that about 62 percent of survey respondents think their firms are in the high-market-competition level. More than half of respondents (i.e., 51.27%) indicate that their firms use comprehensive measures or financial measures relative extensively. But only less than 50% of respondents (i.e., 49.37%) indicate their firms use nonfinancial measures relative extensively.

Exhibit 2 shows difference percentages between manufacturing firms ($n = 73$) and non-manufacturing firms' ($n = 85$) competition level, use of different performance measurement types, and firm performance level. The two largest difference percentages are the competition level and the use of nonfinancial measures. Manufacturing firms have a higher competition level (5% higher) and use more non-financial measures (5% more) than nonmanufacturing firms.

Exhibit 3 shows difference percentages between state-owned firms ($n = 49$) and non-state-owned firms' ($n = 109$) competition level, use of different performance measurement types, and firm performance level. The two largest difference percentages are the competition level and the use of financial measures. State-owned firms have a lower competition level (7% lower) and use more of three types of performance measures, namely 5% more in using financial measures, 4% more in using both comprehensive measures and nonfinancial measures. Due to either monopoly or oligopoly environments, state-owned firms

Exhibit 1

Market Competition and Use of Performance Measures*(Sample = 158)*

<i>Variables</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Percentage of Samples With a High score (4, 5, or 6)</i>
Degree of market competition	4.07	0.834	62.03%
Comprehensive measures usage	3.83	1.012	51.27%
Financial measures usage	4.04	1.083	55.7%
Nonfinancial measures usage	3.67	1.268	49.37%
Firm performance	4.05	0.732	56.96%

have an average of 2% higher firm performance.

For seven market competition variables, Exhibit 4 shows that top three highest degree of competition variables are “market competition environment,” “number of competitor,” and “degree of price competition,” with mean scores of 4.59, 4.53, and 4.23, respectively. It also shows that the “new product

introduction frequency” has the lowest degree of competition with the mean score of 3.57 only.

With respect to the use of four financial measures, Exhibit 5 shows that “financial profitability” and “asset utilization” are high-use measures, with a mean score of 4.38 and 4.12, respectively.

For the use of five nonfinancial measures, Exhibit 6 shows

that “internal process management,” “customer satisfaction,” and “product and process quality” are relative high-use measures, with mean scores of 3.89, 3.82 and 3.80, respectively. Comparing with the degree of using financial measures, Chinese firm managers tend to use less nonfinancial measures.

ANALYSIS OF RELATIONSHIP AMONG MARKET COMPETITION, USE OF PERFORMANCE MEASURES, AND FIRM PERFORMANCE

We conducted correlation analyses and found that the use of comprehensive measures is highly correlated with the degree of market competition, and the use of financial measures is also highly correlated with the degree of market competition. But we do not find that the use of nonfinancial measures is highly correlated with the degree of market competition. For example, we found each of three financial measures of “asset utilization,” “debt-paying ability,” and “growth potential” is highly correlated with the degree of market competition, while only one nonfinancial measure of “customer satisfaction” is highly correlated with the

Exhibit 2

Manufacturing Versus Nonmanufacturing Firms

<i>Variables</i>	<i>Manufacturing Mean</i>	<i>Nonmanufacturing Mean</i>	<i>Difference Percentage</i>
Degree of market competition	4.18	3.97	5%
Comprehensive measures usage	3.90	3.78	3%
Financial measures usage	4.06	4.02	1%
Nonfinancial measures usage	3.77	3.58	5%
Firm performance	4.09	4.02	2%

Exhibit 3**State-Owned Versus Non-State-Owned Firms**

<i>Variables</i>	<i>State-Owned Mean</i>	<i>Non-State-Owned Mean</i>	<i>Difference Percentage</i>
Degree of market competition	3.88	4.15	-7%
Comprehensive measures usage	3.95	3.78	4%
Financial measures usage	4.18	3.97	5%
Nonfinancial measures usage	3.76	3.63	4%
Firm performance	4.10	4.03	2%

Exhibit 4**Means and Standard Deviations for Market Competition Variables**

<i>Market Competition Variables</i>	<i>Mean</i>	<i>Standard Deviation</i>
Market competition environment	4.59	1.273
Product/service technology change frequency	3.69	1.261
New product introduction frequency	3.57	1.269
Number of competitors	4.53	1.395
Pressure on market share	3.76	1.520
Degree of government regulation	4.11	1.480
Degree of price competition	4.23	1.472

degree of market competition. A possible reason is that Chinese firm managers are more familiar with financial measures and less familiar with or do not collect data on some nonfinancial measures such as “internal process management,” “product and process quality,” “employee talent, training, and satisfaction,” as well as “social contribution,” and just cut price and use more financial measures such as cost reduction when face with the high-market-competition situation.

We also conducted several regression analyses and found that under the same firm size and the same market competition level, the more of a firm uses comprehensive performance measures, the better the firm performs. Our results also showed that the more a firm uses nonfinancial measures, the better performance a firm obtains. However, the use of financial measures does not present a significant relationship with firm performance. One possible explanation may be that nonfinancial measures are leading indicators while financial measures are lagging indicators; that mean there is a lagging relationship

Exhibit 5**Means and Standard Deviations for the Use of Financial Measures**

<i>Financial Measures</i>	<i>Mean</i>	<i>Standard Deviation</i>
Financial profitability	4.38	1.245
Asset utilization	4.12	1.318
Debt-payment ability	3.89	1.513
Revenue growth potential	3.77	1.561

Exhibit 6**Means and Standard Deviations for the Use of Nonfinancial Measures**

<i>Nonfinancial Measures</i>	<i>Mean</i>	<i>Standard Deviation</i>
Internal process management	3.89	1.508
Customer satisfaction	3.82	1.543
Product and process quality	3.80	1.639
Employee talent, training, and satisfaction	3.63	1.512
Social contribution	3.25	1.627

between financial performance and nonfinancial performance so that the emphasis on financial performance measures cannot lead to increased firm performance contemporaneously. Firm performance indicators shown in Exhibit 7 can be used to explain that the use of financial measures

does not necessary lead to better firm performance. It shows that mean performance scores of five nonfinancial performance indicators (P6 to P10) are higher than those of five financial performance indicators (P1 to P5).

In addition, we conducted regression analyses to examine

the effect of performance measures on overall firm performance under different market competition levels, and surprised to find that firms in high competition do not get better firm performance after the use of comprehensive performance measures. A possible reason is that Chinese firms in intense competition do not have a good strategy to use additional appropriate measures to cope with new situation and just increase their uses of comprehensive performance measures; therefore, the effect of comprehensive performance measures is weak and does not bring forward good performance outcomes.

We also found that most Chinese firms increase the use of financial performance measures only when facing intense competition, and results do not improve their firms' performance. This shows that Chinese managers blindly apply the use of financial measures.

CONCLUSIONS AND IMPLICATIONS

We studied the three separate effects of market competition on the use of comprehensive performance measures (including both financial and nonfinancial measures), only use of financial performance measures, and only use of nonfinancial performance measures by Chinese firms. We found that the intensification of market competition would lead to firms' increasing their use of comprehensive performance measures. Judging from two aspects of comprehensive performance measures, most Chinese firms only increase the use of financial performance measures, not nonfinancial measures, when facing intense competition.

Exhibit 7**Firm Performance Scores for Individual Performance Indicators**

<i>No.</i>	<i>Performance Indicators</i>	<i>Mean</i>	<i>Standard Deviation</i>
P1	Return on equity	3.66	1.075
P2	Gross profit percentage	3.66	0.952
P3	Equipment utilization rate	3.91	1.031
P4	Assets turnover rate	3.84	1.006
P5	Debt-paying ability	4.12	1.154
P6	Customer satisfaction	4.27	0.908
P7	Employee satisfaction	4.02	1.000
P8	Product quality	4.27	0.992
P9	Social contribution	4.28	1.057
P10	Defective product return rate	4.37	1.003

We also examined the relationship between the use of performance measures and the firm performance. We find that under the same firm size and the same market competition level, an increase in the use of financial measures does not lead to higher performance in Chinese firms, while an increase in the use of comprehensive performance measures or nonfinancial measures could improve firm performance. Furthermore, the more competitive the market, the worse the performance a firm would encounter when it increased the use of financial measures. Our result indicates that comprehensive performance measures are very useful to firms.

There are two important implications of our findings. First, we found that Chinese firms often react passively to intensifying competition by increasing their use of financial measures and ignoring the use of nonfinancial measures. In fact, intensifying the use of financial measures would not necessarily improve their overall firm performance, while intensifying the use of nonfinancial measures could improve their overall firm performance. Chinese firms' managers need to learn that nonfinancial measures are leading indicators while financial

measures are lagging indicators. Second, they need to learn that when the degree of firm competition intensified, cutting price and reducing cost is not necessary a good strategy; Chinese firms' managers need to apply a good strategy with a proper mixture of relevant financial and nonfinancial measures in a highly competitive environment.

ACKNOWLEDGMENT

The authors acknowledge the funding supported by the PRC Ministry of Education Project for a key university's Humanities and Social Science Research Institute (Project No. 10JJD630005), the National Nature Science Fund Committee (Projects No. 71032005 No.70671063, and No. 71272218), Shanghai Municipal Education Commission (Project No. 11ZS144), Shanghai City Pujiang Program (Project No. PJ200800551), and the Shanghai University of Finance and Economics (SUFE 211 Project No. 3), as well as the research assistance provided by Feng Liu and helpful suggestions from Margaret Palisoc.

NOTE

1. We distributed questionnaires to 1,002 firms' controllers and cost managers, and received a total of 189 questionnaires,

with 31 copies incomplete. The number of effective samples is 158. The return rate of the questionnaire is 18.86%, and the valid questionnaire return rate is 15.77%.

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