Research on the Relationship between Market Orientation and Performance Based on Multiple-Group SEM

——Comparison of manufacturing and service industries

Wan Guangsheng[1,2]

[1]School of International Business Administration, Shanghai University of Finance & Economics, Shanghai, 200433

[2] Shanghai Medical Instrumentation College, USST, Shanghai, 200093

Abstract

By using multiple-group SEM, this paper discusses the relationship between market orientation and performance. Comparison analysis of this relationship was carried on among manufacturing and service industries. The results show that market orientation and its three dimensions have significant positive effects on performance without distinguishing industry categories. When industry categories are distinguished, the influence of market orientation on performance is different in manufacturing and service industries. That is to say the influence of customer orientation on performance is significant in both industries. While the influence of competitor orientation on performance is significant only in enterprises of service industry and the influence of inter-functional coordination on performance is significant only in enterprises of manufacturing industry.

Keywords: market orientation; performance; multiple-group SEM

1. Introduction

Since the concept of market orientation was put forward in the 1990s, it has been drawing attention from academic and industrial circles. The empirical results of the influence of enterprise market orientation on performance diverge. Some research results supported the positive relationship between them （Narver & Slater, 1994; Kohli & Jawoski, 1993; Omar Merlo et al., 2009）. However, other studies did not find any relationship between them （Greenley, 1995; Han, 1998; and so on）.

In response to this problem, some scholars began to interpret it from other perspectives, such as explaining it with the introduction of mediators and moderators （Han, Kin & Sricastava, 1998; Matsuno & Mentzer, 2000; Wei *et al.*, 2009）. For example, some scholars studied their relationship taking marketing innovation, strategic flexibility, and innovation orientation as mediators （Ma Yong *et al.*, 2009; Zhang Jing *et al.*, 2010）. However, most of previous studies analyzed the sample enterprises in a certain industry. Comparative analyses among multiple industries are rarely found. In this way, it is difficult to explore the differences of their relationship among different industries. Therefore, this study aims to explore the relationship between market orientation and performance of enterprises in different industry (manufacturing and service industries).

2. Theoretical basis and assumptions

2.1. Market orientation

In the evolution course of market orientation theories, a variety of viewpoints were formed. Among them, behavior view and culture view have become the mainstream viewpoints in academic circle.

Behavior view （Kohli & Jawoski，1990，1993）emphasizes on creation of market information, information transformation among sectors of enterprises and response to information. It states market orientation from the perspective of behavior process that enterprises deal with market information. Culture view （Narver & Slater, 1990, 1994）believes market orientation is the philosophy that is deeply rooted in corporate culture, emphasizing that it is an intangible concept.

Adopting culture view of market orientation, this study uses the three dimensions of market orientation: customer orientation, competitor orientation and interfunctional coordination （Narver & Slater, 1990）.

2.2. Performance evaluation

Performance evaluation helps to judge the efficiency of enterprises' behavior, analyze the existing problems. Currently, performance evaluation indicators have extended from financial indicator to nonfinancial indicator, from single indicator to comprehensive evaluation of multiple indicators.

In the 1960s, financial indicators such as profits, sales, cash flow etc. are the key indicators of performance evaluation （Feder, 1965）. In the 1980s, nonfinancial indicators such as customer satisfaction, customer loyalty, brand value etc. were widely used. In addition, some scholars divided the indicators into objective indicators and subjective indicators. They proved that subjective performance and objective performance have a very strong correlation （Dess & Robinson, 1984）.

2.3. Market orientation and performance

Market orientation cannot improve enterprise performance under any circumstances. For example, Narver and Slater （1990） found that for commodity enterprises, both high and low market orientation enterprises have good performance, while the middle market orientation enterprises have poor performance. However, market orientation's influence on the performance of non-commodity enterprises is positive. After summarizing of the empirical research results of different countries, it is found that there is more positive correlation between market orientation and performance and less negative correlation or no correlation （Li Ji *et al.*, 2010）.

This study tests the relationship between market orientation and performance. It verifies whether there is a positive correlation between them when industry categories are not distinguished. The following hypotheses are proposed.

H1: Market orientation of enterprises has positive influence on marketing performance.

H1a: Customer orientation of enterprises has positive influence on marketing performance; H1b: Competitor orientation of enterprises has positive influence on marketing performance; H1c: Interfunctional coordination of enterprise has positive influence on marketing performance.

In exploring the moderating effect of the relationship between market orientation and performance, variables such as environmental uncertainty, market change, technological change and industry category are selected. Deshpande & Farley （1998） believed that industry category has no effect on the relationship between market orientation and perfor-

mance. Narver & Slater（1990）thought that industry category may have effect on their relationship. Greenly （1995）also pointed out that the effects varied among different industry categories. Therefore, industry category may be a moderator of the relationship between market orientation and performance. The following hypotheses are proposed.

H2: Market orientation of enterprises in manufacturing industry and service industry both have positive influence on marketing performance.

H2a: Customer orientation of enterprises in manufacturing industry and service industry both have positive influence on marketing performance.

H2b: Competitor orientation of enterprises in manufacturing industry and service industry both have positive influence on marketing performance.

H2c: Inter-functional coordination of enterprise in manufacturing industry and service industry both have positive influence on marketing performance.

3. Methods

3.1. Sample and data collection

The sample of this study is set to the Yangtze River Delta and its surrounding areas. The investigation was conducted with the combination of convenience sampling and snowball sampling methods. The data were questionnaires finished by middle and senior executives of different enterprises. Investigation time lasted from October of 2011 to May of 2012. 421 questionnaires were recovered from the total of 760 questionnaires sent. Among them, 323 questionnaires are valid. The questionnaire data was processed and analyzed with SPSS11.5 and AMOS17.0.

3.2. Measurement scales

Likert 5 scale is used for variables measurement. It asks the respondents to judge the degree of agreement according to the actual situation.

(1) Market orientation scale

In the measurement of market orientation, the main scales are MTKOR scale （Narver & Slater,1990）and MARKOR scale （Kohli, Jawoski & Kumar, 1993）. MTKOR scale is adopted in this study. It consists of three dimensions, a total of 15 items.

(2) Marketing performance scale

This study measures performance with subjective indicators. The existing studies show that subjective indicators can also reflect performance status well （Brownell & Dunk, 1991）. This study adopts the target methods proposed by Ford and Schellenberg（1982）. Marketing performance is measured with 7 items.

(3) Other variables

This study also measures variables such as industry category of the enterprises, corporate size, operating time and geographical factors.

4. Results

4.1. Data description

The sample enterprises cover manufacturing and service industries. 47.4% effective sample enterprises are from manufacturing industry, 52.6% from service industry. For staff size, small-sized enterprises （staff number<400）account for 38.5%, medium-sized enterprises （400 ≤staff number <1000 ）account for 35.7% and large-sized enterprises （staff number≥1000） account for 25.8%. For operating time, 22.1% enterprises are less than 5 years, 40.8% enterprises are from 5 to 10 years, and 37.1% enterprises are more than 10 years.

4.2. Reliability and validity analysis

(1) Reliability and validity of market orientation scale

Confirmatory factor analysis is used to evaluate the reliability and validity of market orientation and its sub-dimension scale. After rejecting the items with less than 0.5 factor loads, we got the revised scale. The Cronbach's α of three sub-dimension scales of market orientation are between 0.789 and 0.820（> 0.7）. The composite reliability are between 0.793 and 0.825（> 0.7）. The AVE values are between 0.491 and 0.577. These demonstrate the good reliability of all the scales, as shown in Table 1.

Table 1　Correlation and reliability of MTKOR scale

	Customer orientation	Competitor orientation	Inter-functional coordination	Cronbach's α	CR	AVE
Customer orientation	**0.701**[a]			0.789	0.793	0.492
Competitor orientation	0.202**[b]	**0.759**		0.799	0.802	0.577
Inter-functional coordination	0.394**	0.282**	**0.701**	0.820	0.825	0.491

Note: a. Correlation matrix diagonal in bold shows the square root value of AVE; b. The lower left of correlation matrix shows the correlation coefficient value; ** stands for $p < 0.01$ (two-tailed).

MTKOR scale is an authoritative and mature scale. This guarantees its good content validity. Second order CFA shows that the mode fitting is good (χ^2/df=0.84, RMSEA=0.001, GFI, NFI, CFI, IFI are all bigger than 0.9). First order standard loads are between 0.53 and 0.85. Second order standard loads are between 0.82 and 0.94. All are significant. Therefore, it has good convergent validity. Table 1 show that AVE square roots are all bigger than correlation coefficients of the corresponding rows and columns. This demonstrates the good discrimination validity of the scale.

(2) Reliability and validity of the marketing performance scale

CFA is used to evaluate the reliability and validity of the performance scale. Its Cronbach's α is 0.90, CR is 0.898 and AVE value is 0.563. They are all bigger than the corresponding critical values. So the scale has high reliability. First order CFA shows the good fitting of the model （χ^2/df=1.68, RMSEA=0.061, GFI, NFI, CFI, IFI are all bigger than 0.9）. The standard loads are between 0.53 and 0.88 and significant. In addition, the scale is adapted from mature scale, with good content validity.

4.3.　Model analyses

SEM technology is used for analyses. Firstly, analysis based on the overall sample is carried on. The relationship between market orientation and performance is verified. Secondly, comparative analysis on samples from manufacturing industry and service industry is carried on, using multiple-group SEM.

（1）Market orientation and performance——based on the overall samples

Market orientation and performance relationship model is set. The model fitting is acceptable （χ^2/df=1.001, RMSEA= 0.003, GFI= 0.931, NFI= 0.933, CFI= 1.000, IFI= 1.000). The standardized path coefficient is 0.70（p<0.01）. The results show that the higher market orientation of enterprises is, the better its marketing performance is. It supports hypothesis 1. Market orientation sub-dimension relationship on performance model is set. A acceptable fitting result is achieved after model modification （χ^2/df=1.318, RMSEA=0.042, GFI= 0.907, NFI=0.909, CFI=0.976, IFI= 0.976). As shown in Table 2, customer orientation standardized path coefficient on performance is 0.36（p<0.01）. Competitor orientation standardized path

coefficient on performance is 0.26
（p<0.01）. Inter-functional coordina-
tion standardized coefficient on perfor-
mance is 0.19（p=0.059, <0.10）. The
results show that all sub-dimensions of
market orientation have positive influ-
ence on performance. These support hy-
potheses 1a-1c.

Table 2　Relationship between market orientation and marketing performance

Hypothesis path	The overall sample	
	Standardized coefficient	T value
Market orientation→marketing performance	0.70***	8.26
Customer orientation→marketing performance	0.36***	3.49
Competitor orientation→marketing performance	0.26***	3.15
Inter-functional coordination→marketing performance	0.19*	1.89

Note：***stands for $p<0.01$（two-tailed）；** stands for $p<0.05$（two-tailed）；* stands for $p<0.10$（two-tailed）.

(2) Market orientation and perfor-
mance——multiple-group SEM analysis

The sample of enterprises in manufac-
turing industry and service industry are
analyzed. A positive correlation between
market orientation and performance is
found. The model fitting parameters are
relatively ideal (see Table 3). Models in
Table 3 are as follows. MA: estimation of
manufacturing industry alone; MB: esti-
mation of service industry alone; M1: es-
timation of both groups at the same time
(unconstrained); M2: equivalent meas-
urement model coefficient; M3: equiva-
lent structure model coefficient; M4:
equivalent structure model covariance;
M5: equivalent structure model residual;
M1-M5 are successively arranged. The
constraints of latter model include the
ones of previous model.

The relationship between latent varia-
bles of all sub-dimensions of market ori-
entation and performance is set. Multiple-
group SEM is adopted to test if industry
categories have moderating effect on the
relationship between market orientation
and performance. When limiting meas-
urement model coefficients equal,
$\Delta\chi^2(16)$ =20.88, Δ $RMSEA$
=0.001, ΔNFI=0.009, ΔIFI=0.002, ΔCFI
=0.002. It doesn't meet the refusal critical
condition. So it is considered as equal.
After further adding constraints, requiring
equal model structure coefficients, the
model parameters are $\Delta\chi^2(3)$ =7.58,
$\Delta RMSEA$=0.001, ΔNFI= 0.001, ΔIFI=
0.000, ΔCFI= 0.001. The fitting is fairly
well. But it meets 0.1 significant level
critical value. It rejects hypothesis condi-
tion of equal model structure coefficient.
The paths coefficients may be different.

Table 3　Multiple-group analysis of market orientation on performance

Models	χ^2	df	$\Delta\chi^2(\Delta df)$	RMSEA	NFI	IFI	CFI
M$_A$	219.12	146		0.076	0.820	0.932	0.929
M$_B$	231.02	146		0.078	0.811	0.921	0.918
M1	450.14	292		0.055	0.816	0.926	0.923
M2	471.02	308	20.88(16)	0.054	0.807	0.924	0.921
M3	478.60	311	7.58(3)	0.053	0.806	0.924	0.922
M4	484.99	317	6.39(6)	0.053	0.804	0.924	0.921
M5	485.06	318	0.07 (1)	0.053	0.804	0.924	0.922

Note: M1-M5 in the table are progressively strengthened from top to bottom with strengthened constraints con-
ditions. Constraints of the latter model include the ones of its previous model.

Further analysis shows that there is dif-
ference in sub-dimensions' influence on
performance in manufacturing industry
and service industry as shown in Table 4.
For customer orientation's influence on
performance, the standardized path coef-

ficients are 0.258（p<0.1） in manufacturing industry, 0.396（p<0.01） in service industry. For competitor orientation's influence on performance, the standardized path coefficient is 0.279 （p<0.01） in service industry, not significant in manufacturing industry. For in-ter-functional coordination's influence on performance, the standardized path coefficient is 0.422（p<0.05） in manufacturing industry, not significant in service industry. Thus, hypothesis 2a is partially supported, while hypotheses 2b and 2c are rejected.

Table 4　Relationship between market orientation & performance based on multiple-group SEM analysis

Hypotheses paths	Enterprises in manufacturing industry		Enterprises in service industry	
	Standardized coefficient	T value	Standardized coefficient	T value
Customer orientation→ marketing performance	0.258*	1.795	0.396***	2.918
Competitor orientation→ marketing performance	0.170	1.091	0.279***	2.672
Inter-functional coordination→ marketing performance	0.422**	2.157	0.100	0.821

Note：***stands for $p<0.01$（two-tailed test）；** stands for $p<0.05$（two-tailed test）；* stands for $p<0.10$（two-tailed test）.

5. Conclusion

The purpose of this study is to explore if market orientation's influence on performance is affected by industry categories. Firstly, analysis results of the overall sample without distinguishing industry categories show that market orientation of enterprises has significant influence on performance. Moreover, the three sub-dimensions have significant influence on performance. This result is consistent with conclusions of some scholars at home and abroad (Hooley, 1999; Ma Yong *et al.*, 2009; etc.).

Secondly, samples in manufacturing industry and service industry are analyzed when industry categories are distinguished. The results show that overall market orientation has significant influence on performance, while there is difference in market orientation sub-dimensions' influence on performance. With multiple-group SEM, it is found that customer orientation and inter-functional coordination have significant influence on performance, while competitor orientation has no significant influence on performance in manufacturing industry. Customer orientation and competitor orientation both have significant influence on performance, while inter-functional coordination has no significant influence on performance in service industry. This result provides strong empirical support for the points proposed by Narver & Slater （1990） and Greenly（1995） which is market orientation's influence on performance varied with different industry categories.

Market orientation's influence on performance in manufacturing industry is different from its influence in service industry. This maybe caused because of factors such as different industry characteristics and market environment. The increasingly mature market economy intensifies market competition. It requires enterprises to provide good service to customers, put customers first. Therefore, customer orientation is significant. But economy of China is still in the transition period. It is influenced by industrial structure and its development history. Influenced by market environment, enterprises in manufacturing industry (large state-owned enterprises in particular) are gradually adjusted. Its customer orientation is

still not as good as the one in enterprises in service industry.

In recent years, service industry develops rapidly. Enterprises in service industry are smaller in size but larger in number. Their market entrance requirement is lower than it in manufacturing industry. The market competition in service industry is fierce. All of these lead to higher competitor orientation of enterprises in service industry in market competition, which largely affects performance. In addition, enterprises in manufacturing industry require collaboration of many sectors. The complexity of production process is beyond the one in enterprises in service industry, which also requires enterprises in manufacturing industry with higher inter-functional coordination ability. Therefore, we see difference in competitor orientation and inter-functional coordination's influence on performance in manufacturing industry and service industry.

There are some shortcomings in this study. Firstly, samples are limited in the Yangtze River Delta and its surrounding area. Secondly, other variables influencing performance should be further restricted, which may affect the convincingness of the results. In future research, we will overcome these shortcomings to further improve the conclusion.

6. References

[1] Kohli, A.J. and Jaworski, B. J.. Market orientation: the construct, research proposition and managerial implication [J]. *Journal of Marketing*, 1990, 54(4): 1-18.

[2] Jaworski, B.J. and Kohli, A.J., Market orientation: Antecedents and consequences [J]. *Journal of Marketing*, 1993, 57(3): 53-70.

[3] Slater, S.F. and Narver, J.C., Does competitive environment moderate the market orientation-performance relationship [J]. *Journal of Marketing*, 1994, 58 (January): 46-55.

[4] Hooley, Graham John Fahy, Tony Cox, Jozaef Beracs, Kraysztof Fonfara, Boris Snoj. Marketing capabilities and firm performance: a hierarchical model [J]. *Journal of market-focused management*, 1994, 4:259-278.

[5] Dess G.G., Robinson, R.B., Measuring organizational performance in the absence of objective measures [J]. *Strategic Management Journal*, 1984, 5:265-273.

[6] Omar Merlo, Seigyoung Auh. The effects of entrepreneurial orientation, market orientation, and marketing sbuunit influence on firm performance [J]. *Marketing Lett*. 2009(20): 295-311.

[7] Deshpande R, Farley J U., Measuring market orientation: generalization and synthesis. *Journal of Market-focused Management*, 1998, 2(3).

[8] Greenley G.E. Market orientation and company performanc: empirical evidence from UK companies [J]. *British Journal of Management*, 1995, 6:1-13.

[9] Han, J.K., Kim, N., Srivastava, R.K., Market orientation and organizational performance: is innovation a missing link [J]. *Journal of marketing*, 1998, 62: 30-45.

[10] Matsuno, Ken, Mentzer, John T., The effects of strategy type on market orientation-performance relationship [J]. *Journal of Marketing*, 2000, 64(4):1-16.

[11] Yinghong(Susan) Wei, Kwaku Atuahene-Gima. The moderating role of reward systems in the relationship between market orientation and new product performance in China [J]. *Intern. J. of Research in Marketing*. 26(2009):89-96.