

# **Analyses Of Differentiations Between Perception And Execution For Sources Of An Organization's Competitiveness, Performance And Case Studies – An Example Of Taiwanese Small And Medium Enterprises**

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*As one critical role of domestically economic development in different stages since World War II, Taiwan's 1.23 million small and medium enterprises still hire labors over 5.38 million, 69.6% of the total labor force, and have sales volumes accounting for 28.34% of the total amount until now (2008 White Book on Small and Medium Enterprises). With this perception, we comprehend these small and medium enterprises still play a critical role in Taiwan's economic development because of their features such as adaptability for variable environments, tenacity for overcoming difficulties, proper applications of networks, control of opportunities, risk diversification, flexibility for technology introduction, adventure spirits, vigorous enterprising concepts, fast integration, high export-orientated style, and active development in markets which create world-famous Taiwanese miracles. However, facing pressure from international protectionism, environmental protection consciousness, and intense competitions from developing countries with enormous low-paid labors, small and medium enterprises cannot but orientate structural adjustment, higher technical level, development in automated operations, and business functions & competencies since 1980's for the purpose of sustainable business and development and enhancement of competitiveness.*

*Along with competency indicators in four dimensions such as marketing, product design and R&D, manufacture, and human resource (HR) management acquired from literature reviews, the total 36 competency indicators are confirmed from pre-tests for managers of five small and medium enterprises as references for sources of small & medium enterprises' competitiveness. Furthermore, we adopt the questionnaire to*

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*investigate correlations between respect to competitiveness dimensions and an enterprise's performance. Results summarized in this study are: Respect to four functional areas has positive effects on an enterprise's performance; no significant differentiation is observed between importance perception and execution in three competency indicators except manufacture competency, which demonstrates Taiwanese OEM-oriented small & medium enterprises' perception in manufacture competency, according to conclusions from the questionnaire. However, differentiations between importance perception and execution are observed in other three functional areas' 9 indicators which are arranged in the "area urgently improved" of the two-dimensional matrix for this study: (1) Product and service quality; (2) Construction of a private brand; (3) Development of a unique market; (4) Development of a new promotion technique; (5) R&D for a new product or service; (6) Reduction in lead time for R&D of a new product; (7) Investment of funds for R&D; (8) Training curriculums; (9) Employees authorized. Next, with further interviews, semi-structured questionnaire, collections of files and data, and practical observation integrated, we employ case studies to investigate root causes resulting in differentiations of 9 above-mentioned indicators, developing theses for enterprises' managers as references of selecting strategies for improvement in an enterprise' quality and promotion in business skills.*

Field of Research: Contemporary Issues in Management, Strategic Policy and Entrepreneurship

## **1. Introduction**

As a witness of Taiwan's economic growth, the development of Taiwan's small and medium enterprises during different stages over post-WWII through now demonstrated these enterprises' critical role (Huilin Wu *et al.*, 1987; Chi Schive *et al.*, 1992). Considering Taiwanese small and medium enterprises' success in different stages, we summarize the following features: good adaptability for variable environment, tenacity for overcoming difficulties, proper applications of networks, control of opportunities, risk diversification, flexibility for technology introduction, adventure spirits, vigorous enterprising concepts, fast integration, high export-orientated style, and active development in markets (Tzong-shian Yu, 1994; Ming-tian Tsai *et al.*, 2004). For the government and small & medium enterprises' business operators within variable business environment at Taiwan, how to promote strategic functions in competencies of four dimensions such as marketing, product innovation and R&D, manufacture, and human resource for the sake of improving small and medium enterprises' competitiveness has become an urgent task. In this regard, scholars usually emphasize strategies in business or technologies as opposed to strategies in functions (Chi-ming Yin, 1989; Ford, 1988; Ettlie and Bridges, 1987). To improve small and medium enterprises' competitiveness, we investigate these enterprises' strategic functions in this study from another viewpoint. Due to the fact that there are few literatures

at home integrating small and medium enterprises' strategic functions to explore enhancement of enterprises' competitiveness which is an issue correlated with Taiwanese small and medium enterprises' competitiveness and business performance, this fact has become one of various reasons to encourage this study. Based on papers of Tien *et al.* (2005) for "A Study for Relationships between Sources of Taiwanese Small and Medium Enterprises' Competencies and Business Performance" and Li (2000) for "A Study for Sources of China Manufacturing Industry's Competitiveness", some competency indicators significantly perceived but weakly executed by small and medium enterprises' managers are chosen for case studies to find root causes whose values consist in not only academic & pragmatic applications but also references of the government's policy makers assisting small and medium enterprises. This factor is the second reason to prompt this study.

## **2. Literature Review**

With the case study adopted in the research, we constantly observed 6 enterprises to collect some records since 2007. In this study, the case study contains two meanings at least:

1. Further analyses in enhancement of present small and medium enterprises' competitiveness, especially enhancement via dynamic control.
2. Concrete comprehension for phenomenon deliberately and constantly observed; supply of a general theory closed to current status.

Mentioned in the "1996 White Book on Small and Medium Enterprises" and confronted by enterprises in general, many problems with respect to Taiwanese small and medium enterprises' business are summarized as follows:

1. Insufficient small or medium-size industrial lands on edges of a populous city and expensive land prices make a small or medium enterprise have rare possibility to acquire lands, and there is no enough lands matching requirements in economic activities occurring inside a city's commercial area and leading to expensive rents of commercial offices and business places.
2. As a result of shortage in basic labors and raised wages, small and medium enterprises have difficulties to attract or train required competent people in contrast to large enterprises.
3. Insufficient funds owned by enterprises, poor financial structure, and shortage in guarantees, guarantors, or circulating capitals makes small and medium enterprises have rare opportunities of acquiring loans or funds from the bank systems or the capital market. Untrue financial statements or increased risks in financial management come from enterprises' incorrect perception for complete accounting systems or ignorance in importance of financial statements.
4. Unsmooth marketing channels, rare benefits, and shortage in business information required.
5. Intense competitions in prices of products from abroad because of an increasingly-opened domestic market.
6. Weak competency in innovation out of swiftly progressive technologies; high turnover

causing difficulties in inheritance of technologies.

7. Enterprisers cannot afford dramatic costs from increasingly significant requirements in environmental protection, labor, and social welfare.
8. Because complete regulations incorporating small and medium enterprises' business features and requirements in economy, environmental protection, investment, purchase, labor, finance, tax, land, and architecture are unavailable, the facts that these indecisive enterprises may be not subject to or even offend against laws in their business need to be improved.

### **3. Research And Investigation**

#### **(1) Concept of competitiveness**

Demonstrated by Porter (1990) who argued strategies owned by one company expecting to have the leading status, the manipulation of this company's unique competencies such as new product design, adoption of new production techniques, training plans, quality control programs, and improvement in relationships with suppliers is indispensable. Depending on one company's internal competencies, foundation of a company triumphing in the market, the competitiveness in the market simultaneously decides a company's development in the future (Corbett and Wassenhove, 1993). Ansoff (1965) deemed that the competitive advantage coming from an individual product's or a market's unique asset brings strong competitive status for one enterprise. Hofer and Schendel (1983) emphasized that the competitive advantage develops a unique competitive status of one organization with strategies in its activity fields and resources compared with other rivals. Argued by Porter (1990), the competitive advantage is "a situation or a condition generated from planned competitive strategies and being favorable to competitions and highly supportable". With a durable advantage accentuated, the competitiveness, a long-term concept, will be setup and maintained via perennial efforts and accumulation in experience and techniques (Dunning, 1993).

#### **(2) Dimensions for sources of competitiveness**

Based on features of Taiwanese small and medium enterprises and interviewees' opinions, we argue one company's enhanced competitiveness comes from improvement in competencies of four dimensions including marketing, product innovation, manufacture, and human resource management because of a company's sustainable development within an intense competitive environment relying on four integrated functional competencies which have positive contributions for one company (Droge *et al.*, 1994; Li, 2000).

### (3) Evaluations of performance

Divided into specialized and generalized explanations in evaluations of business performance, the specialized evaluation is to measure degrees of economic targets completed by one enterprise via achievements of financial indicators which are a major manner in previously pragmatic research containing return on sales (ROS) and rate on investment (ROI) (Hofer, 1983; Venkatraman and Ramanujam, 1986); the generalized evaluation additionally including non-financial indicators such as operational performance in addition to financial performance indicators measures the following indicators of market share, sales revenue, and market effect with this structure considered (Smith and Grimm, 1987; Tushman and Romanelli, 1985; Venkatraman and Ramanujam, 1986). Summarizing conclusions derived from these scholars' studies previously and features of domestic small and medium enterprises' business, we argue evaluation of small and medium enterprises' performance from finance and marketing by taking after-tax profit return on investment, sales income, and market share as indicators.

### (4) Method for evaluation

Pointed out in literatures for study methods, the descriptive statistics and regression analyses are properly available to those topics covered in this study. The structural relationships between competitiveness and business performance conceptually and theoretically are shown in fig. 3.1.

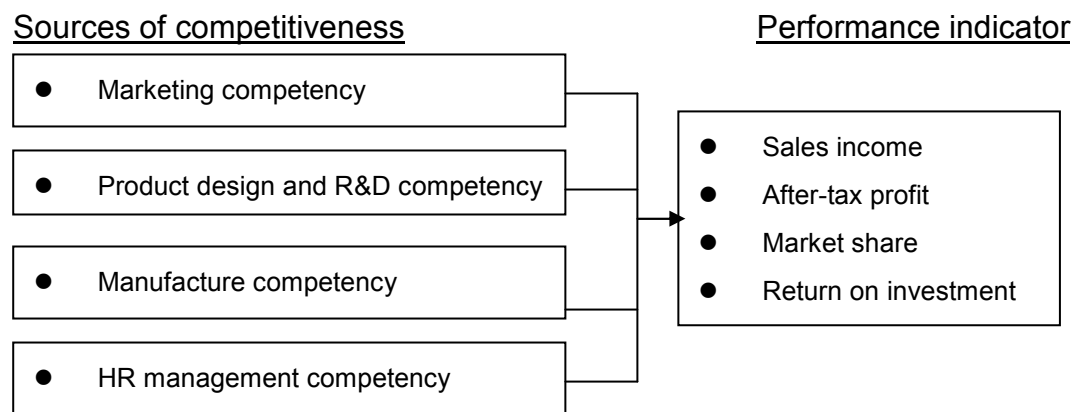


Fig. 3.1, Research structure

### (5) Competitiveness dimension and competency indicator

With some scholars' studies summarized here, we offer four dimensions of marketing, product design and R&D, manufacture, and human resource as sources of small and medium enterprises' competitiveness (Blackburn, 1991; Capon *et al.*, 1990; Drucker, 1973; Hayes and Wheelwright, 1984; Leonidas *et al.*, 2002; Skinner, 1985; Sun and Hong, 2002; Tunalv, 1992). On the other hand, we also summarize 36 competencies by referring to literatures for marketing, product innovation, manufacture, and human

resource areas (Droge *et al.*, 1994; Evans and Lindsay, 1996; Hayes and Wheelwright, 1984; Li, 2000; Lucia *et al.*, 2001; Simerly, 1997; Tunalv, 1992).

#### (6) Hypotheses for this study

H<sub>1</sub>: Positive correlation between enhancement in marketing competency (MKT, X<sub>1</sub>) and business performance.

H<sub>2</sub>: Positive correlation between product design and R&D competency (PDD, X<sub>2</sub>) and business performance.

H<sub>3</sub>: Positive correlation between improved manufacture competency (MFG, X<sub>3</sub>) and business performance.

H<sub>4</sub>: Positive correlation between human resource management competency (HRM, X<sub>4</sub>) and business performance.

H<sub>5</sub>: Positive correlation between enhanced competitiveness and business performance.

#### (7) Collections of questionnaires and data analyses

Taking Taiwanese small and medium enterprises as objects in this study, we selected enterprises having employees less than 200 and registered capitals not more than NTD 80 million and located at 11 industrial parks including Taichung Industrial Park, Taichung Harbor Related Industrial Park, Daiji Youth Industrial Park, Dali Industrial Park, Changhua Coastal Industrial Park, Fusing Industrial Park, Bitou Industrial Park, Chuangsing Industrial Park, Fangyuan Industrial Park, Jhushan Industrial Park, and Nangang Industrial Park by delivering questionnaires to these enterprises' managers or above as respondents from February 2008 to April 2008. With 32 ineffective questionnaires deducted from 792 responded among 2,500 anonymous questionnaires, the number of effective questionnaires was 760 (effective response rate 30.4%). The method for measurement of competitiveness and performance was the Likert 5 Points Scale. The content for questions listed in the questionnaire with 4 functional areas and 36 competencies was ensured at interviews with several managers in advance.

#### (8) Analyses in statistics

##### 1. Tests in reliability and validity

As shown in Table 3.2, the Cronbach's  $\alpha$  coefficient for each dimension with respect to competitiveness and business performance can be calculated according to scores from answers of the questionnaire.

Table 3.2, Reliability for each dimension in this study

Dimension of the questionnaire	Sources of competitiveness			
	Marketing competency	Product design and R&D competency	Manufacture competency	HR management competency
Cronbach $\alpha$	0.8582	0.8464	0.8757	0.8523

## 2. Data analyses

Divided into two stages, data analyses contain (1) Descriptive statistics explaining the importance of sources of competitiveness and (2) Relevant and regression analyses examining relationships between sources of competitiveness and performance (Droge *et al.*, 1994). For each performance factor, the least-square is used for estimation of simple regression coefficients ( $\beta_i$ ).

For the sake of analyzing effects of four competency dimensions on performance, the multiple regression equation with multiple regression coefficients ( $\beta_i$ ) estimated by the least-square is shown as follows:

$$\text{Performance}_5 = \alpha_5 + \beta_1 X_1(\text{MKT}) + \beta_2 X_2(\text{PDD}) + \beta_3 X_3(\text{MFG}) + \beta_4 X_4(\text{HRM}) + \mu_5 \quad (1)$$

Where  $\mu$  is a random disturbance term and  $\beta_i$ , multiple regression coefficient, is the expected alteration of a performance indicator caused by one unit change of the  $i$ th independent (source of competitiveness).

## 3. Verification of results

Table 3.3, 3.4 and 3.5 contain means, standard deviations and measured performance for four dimensions including marketing competency (MKT), product design and R&D competency (PDD), manufacture competency (MFG), and HR management competency. Correlations are shown in Table 3.3 and 3.4.

Table 3.3, Correlations between descriptive statistics and competitiveness

Competency	Mean	Standard deviation	Correlation with			
			X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>
X <sub>1</sub> (MKT)	3.9582	0.6172	1			
X <sub>2</sub> (PDD)	3.8705	0.6671	0.6084***	1		
X <sub>3</sub> (MFG)	3.8922	0.5277	0.5170***	0.6139***	1	
X <sub>4</sub> (HRM)	3.8489	0.6195	0.5175***	0.4825***	0.4598***	1

Notes: \*P<0.1; \*\*P<0.05; \*\*\*P<0.01

Table 3.4, Correlations between descriptive statistics and performance

Performance	Mean	Standard deviation	Correlation with			
			Y1	Y2	Y3	Y4
Y1(Sales income)	3.9207	0.5291	1			
Y2(After-tax profit)	3.8079	0.5915	0.8171***	1		
Y3(Market share)	3.8632	0.5955	0.7841***	0.7984***	1	
Y4(Return on investment)	3.8786	0.5857	0.7632***	0.8260***	0.8129***	1

Notes: \*P<0.1; \*\*P<0.05; \*\*\*P<0.01

Table 3.5, Correlations between competitiveness and performance

Performance	Correlation with			
	X <sub>1</sub> (MKT)	X <sub>2</sub> (PDD)	X <sub>3</sub> (MFG)	X <sub>4</sub> (HRM)
Y1(Sales income)	0.4857***	0.5247***	0.5101***	0.5474***
Y2(After-tax profit)	0.4897***	0.5072***	0.5140***	0.5558***
Y3(Market share)	0.4911***	0.4976***	0.5000***	0.5363***
Y4(Return on investment)	0.4608***	0.5254***	0.4964***	0.5454***

Notes: \*P<0.1; \*\*P<0.05; \*\*\*P<0.01

According to these results, the positive contributions can be verified between business performance and enhanced marketing competency, improved product design and R&D, improved manufacture competency, or developed HR management competency. Corresponding to arguments for manufacturing enterprises concluded by scholars preciously (Li, 2000; Simerly, 1997), the HR management competency emphasized has positive contributions to after-tax profits.

As independents used for simple regression analyses, four competency areas (MKT, PDD, MFG, and HRM) generate data, as shown from Table 3.6 to Table 3.9.

Table 3.6, Results from simple regression analyses with the marketing competency (X<sub>1</sub>) as an independent

Dependent	Mode R <sup>2</sup>	Intercept	β of X <sub>1</sub>		Residual
			Non-standardized	Standardized	
Y1(Sales income)	0.235***	2.295***	0.411	0.486	1.735
Y2(After-tax profit)	0.239***	1.950***	0.469	0.490	1.800
Y3(Market share)	0.240***	1.988***	0.474	0.491	1.892
Y4(Return on investment)	0.211***	2.148***	0.437	0.461	1.697

Notes: \*P<0.1; \*\*P<0.05; \*\*\*P<0.01

Table 3.7, Results from simple regression analyses with the product design and R&D competency (X2) as an independent

Dependent	Mode R <sup>2</sup>	Intercept	β of X <sub>2</sub>		Residual
			Non-standardized	Standardized	
Y1(Sales income)	0.274***	2.331***	0.410	0.525	1.692
Y2(After-tax profit)	0.256***	2.067***	0.450	0.507	1.752
Y3(Market share)	0.247***	2.144***	0.444	0.498	1.853
Y4(Return on investment)	0.275***	2.093***	0.461	0.525	1.689

Notes: \*P<0.1; \*\*P<0.05; \*\*\*P<0.01

Table 3.8, Results from simple regression analyses with the manufacture competency (X3) as an independent

Dependent	Mode R <sup>2</sup>	Intercept	β of X <sub>3</sub>		Residual
			Non-standardized	Standardized	
Y1(Sales income)	0.259***	1.956***	0.505	0.510	1.633
Y2(After-tax profit)	0.263***	1.565***	0.576	0.514	1.723
Y3(market share)	0.249***	1.667***	0.564	0.500	1.761
Y4(Return on investment)	0.245***	1.734***	0.551	0.496	1.688

Notes: \*P<0.1; \*\*P<0.05; \*\*\*P<0.01

Table 3.9, Results from simple regression analyses with the HR management competency (X4) as an independent

Dependent	Mode R <sup>2</sup>	Intercept	β of X <sub>4</sub>		Residual
			Non-standardized	Standardized	
Y1(Sales income)	0.299***	2.145***	0.461	0.547	1.816
Y2(After-tax profit)	0.306***	1.765***	0.531	0.556	1.905
Y3(Market share)	0.287***	1.879***	0.515	0.536	1.937
Y4(Return on investment)	0.297***	1.894***	0.516	0.545	1.824

Notes:  
\*P<0.1;  
\*\*P<0.05;  
\*\*\*P<0.01

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From Table 3.6 to Table 3.9 indicating mode R<sup>2</sup> (two-tail P-value for significance of a regression mode), estimated intercepts, and estimated slopes (standardized or non-standardized), significance of all modes R<sup>2</sup> can be observed for P<0.01; significance of all estimated intercepts for P<0.01. These results demonstrate this study's hypotheses, that is, enhancement in all competencies of small and medium enterprises have positive contributions to business performance. With

competencies in marketing, product design and R&D, manufacture, and HR management taken as independents and four performance indicators as dependents, the results from multiple regression analyses are shown in Table 3.10.

Table 3.10, Results for multiple regression analyses

Dependent	Mode R <sup>2</sup>	Intercept	$\beta$				Residual
			X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	
Y1(Sales income)	0.418***	1.226** *	0.093** *	0.148***	0.193** *	0.261***	1.764
Y2(After-tax profit)	0.420***	0.724** *	0.119** *	0.129***	0.237** *	0.310***	1.828
Y3(Market share)	0.400***	0.828** *	0.141** *	0.126***	0.225** *	0.289***	1.899
Y4(Return on investment)	0.408***	0.934** *	0.006	0.192***	0.198** *	0.305***	1.757

Notes: \*P<0.1; \*\*P<0.05; \*\*\*P<0.01

According to results from statistic analyses, five hypotheses in this study are verified. From 16 simple regression analyses and 4 multiple regression analysis modes, enhancement or improvement in competencies of marketing, product design and R&D , manufacture, and HR management have significant effects on 4 performance indicators of sales income, after-tax profit, market share, and return on investment.

#### 4. Discussion

Significant differentiations between the importance of competitiveness indicators perceived by small and medium enterprises' managers and degrees of realistic execution are observed in 9 indicators such as product and service quality, construction of a private brand, development of a unique market, development of a new promotion technique, R&D of a new product or service, reduction in lead time of one newly-developed product, investment of funds for R&D, training curriculums, and employees authorized wherein these items belong to the following three areas, (1) Marketing, (2) Product design and R&D, and (3) HR management.

To materialize the second target of this study and investigate correlations between domestic small and medium enterprises' perception for importance of competitiveness indicators and their realistic execution, we adopt IPA (Important-Performance Analysis) and refer to methods offered by Martilla and James (1977) who used IPA to analyze performance of the auto industry and a two-dimension coordinate system including importance degree and performance evaluation. As shown in Fig. 3.2., the perception for importance of competitiveness indicators and the realistic execution in our study are taken as the X-axis and the

Y-axis, respectively.

Realistic	Mean	Quadrant B Area weighted-excessively	Quadrant A Area constantly-kept
		Quadrant C Area low-important	Quadrant D Area urgent-improved
		Perception for importance	

Fig. 3.2, Distribution for competitiveness indicators

## 5. Case Study

### (1) Research Design

With the case study (Eisenhardt, 1989; Yin, 1994) and the secondary data analyses (Steward, 1984; Hyman, 1972) adopted in this study for collections of data required, the major objective of research is to integrate data for enhancement of competitiveness indicators executed by small and medium enterprises with identical features.

### (2) Development Of Propositions

Proposition 1: Differentiation between small and medium enterprises' perception for importance of product or service quality comes from insufficient resources (capitals and employees), shortage in techniques for evaluation of quality cultures, restricted effects of the government's assistance measures such as ISO 9000 or ISO 9001 certifications for small and medium enterprises accepting assistance or QFD process and concept, enterprises' high-level managers failing to execute above-mentioned regulations seriously, and no use of tools like Statistical Process Control.

Proposition 2: As one long-term strategy without instant effects, one private brand constructed by one Taiwanese small or medium enterprise needs an enterprise's high-level superintendents' recognition and support, large capitals initially invested, R&D as well as production competency and critical technologies owned by an enterprise, cultivation of marketing competent people, setup of marketing channels, and supporting skills in marketing, and proper effects from the government's assistance measures. Without above-mentioned factors supporting, differentiation between small and medium enterprises' perception for importance of a private brand and their realistic execution is observed.

Proposition 3: Differentiation between small and medium enterprises' perception for importance of developing a unique market or a new promotion technique and

their realistic execution is observed for the case of no marketing culture or strong respect from these enterprises' high-level superintendents because of difficulties in constructing one enterprise's marketing skills in the short run and restrictions in this enterprise's scale, manpower, marketing resources (costs spent in marketing and an independent marketing department), and lack in funds and management skills.

Proposition 4: Differentiation between Taiwanese small & medium enterprises' perception for importance of R&D about new products & service or reduction of lead time consumed in development of one new product and their realistic execution is observed due to no good R&D system, no R&D department set up or expanded, no interactions with external knowledge suppliers (such as university or research institute), no strong control over critical technologies, insufficient funds to support business, shortage in technologies and experience, no independent R&D, no flexible manufacture system, no regulated product-introduced process, no newly-employed process for reduction in lead time of a new developed product, and no cross-function interface management.

Proposition 5: Significant differentiation between small & medium enterprises' perception for importance of investing funds and their realistic execution is observed because of no R&D budgets particularly prepared by these enterprises considering their funds for operations and business scales, official lenders' worse efficiency, complicated application process, strict verification for tax credits in R&D, and few investment tax credits in research, development, or training available to small and medium enterprises.

Proposition 6: Differentiation between small & medium enterprises' perception for importance of popularizing training and their realistic execution is observed as a result of the following factors such as restricted resources (in finance, manpower, and qualified teachers), supports from high-level superintendents, employees' inclinations to accept training, uneasily-evaluated achievements in training, high turnover, and enterprisers' declination in long-term investments of funds for different levels of employees.

### **(3) Objects For The Study**

For the purpose of making this study persuasive and general, the multiple-case design is adopted in this study. According to sales volumes of small and medium enterprises in various industries in 2007 (2008 White Book on Small and Medium Enterprises, M.O.E.A.), enterprises are divided into four industries (metal and mechanical industry, chemical industry, IT and electronic industry, and civil industry). Next, derived from the questionnaire in Chapter 3 designed for Taiwanese small and medium enterprises, 6

companies totally from industries with better and worse performance in three functional areas of marketing competency, product design and R&D competency, and HR management competency, are taken as objects in case studies for interviews, observance, and data collections. Following information about enhancement of enterprises' competitiveness collected from data files, we interviewed with enterprises' managers for the realistic execution in competitiveness indicators.

#### (4) Standards For Companies Selected For Case Studies

With 760 responded questionnaires taken as the basis and results verified by the LSD multiple-comparison, we create a newer manner compared with literatures about case studies by referring to data from statistic analyses to take industries with better and worse performance in three functional areas of marketing, product design and R&D, and HR management as references for selections of companies in case studies. Data performed by various industries in different areas are summarized as follows:

Table 4.1, Statistic analyses for marketing competency- LSD multiple comparisons

Dependent	(I) Category	(J) Category	Average variance (I-J)	P value
Marketing competency	Electronic industry	Optoelectronic industry	.1949	.098
		Instrument and equipment	.3503	.001**
		Plastic processing	.2670	.010*
		Mechanical processing	.4803	.000***
		Textile	.5642	.000***
		Chemicals	.3542	.001**
		Pharmacy	.2705	.057
		Electric machinery	.2785	.011*
		Automobile component	.2573	.016*
		Food	.2965	.002**
		Service	.2692	.002**
		other	.3256	.000***

Notes: \*P<0.1; \*\*P<0.05; \*\*\*P<0.01

Table 4.2, Statistic analyses for product design and R&D- LSD multiple comparisons

Dependent	(I) Category	(J) Category	Average variance (I-J)	P value
Product design and R&D	Electronic industry	Optoelectronic industry	.2239	.100
		Instrument and equipment	.5218	.000***
		Plastic processing	.2521	.036*
		Mechanical processing	.4965	.000***
		Textile	.5031	.001**
		Chemicals	.5963	.000***
		Pharmacy	.3303	.044*
		Electric machinery	.2222	.078
		Automobile component	.3092	.012*
		Food	.3379	.002**
		Service	.5882	.000***
Other	.4566	.000***		

Notes: \*P<0.1; \*\*P<0.05; \*\*\*P<0.01

Table 4.3, Statistic analyses for HR management- LSD multiple comparisons

Dependent	(I) Category	(J) Category	Average variance (I-J)	P value
HR management	Electronic industry	Optoelectronic industry	.3170	.014*
		Instrument and equipment	.2564	.021*
		Plastic processing	.2797	.014*
		Mechanical processing	.3992	.000***
		Textile	.5931	.000***
		Chemicals	.2735	.015*
		Pharmacy	.2349	.129
		Electric machinery	.3380	.004*
		Automobile component	.1770	.128
		Food	.3097	.003**
		Service	.1883	.054
		Other	.2512	.007**

Notes: \*P<0.1; \*\*P<0.05; \*\*\*P<0.01

As references for companies selected for case studies, industries with better or worse performance in three functional areas according to data listed in the above table are summarized as follows:

Table 4.4, Industries with better or worse performance in different areas

Functional area	Better industry	Worse industry
Marketing competency	Electronic industry	Textile
Product design and R&D	Electronic industry	Chemicals
HR management	Electronic industry	Textile

## (5) Introduction For Companies Selected For Case Studies

Companies selected for case studies are summarized in Table 4.5.

Table 4.5, Summary of companies for case studies

Company name	Category of industries	Capital	Number of employees	History (Until 2008)
XX Ink Printing Co.	Chemicals	NTD 17 million	32	35 Years
XX Clothing Factory	Textile	NTD 3 million	50	28 Years
X□ Technology Co.	Electronic industry	NTD 3 million	25	8 Years
XX Clothing Factory	Textile	NTD 5 million	18	21 Years
XX Electronics Co.	Electronic industry	NTD 10 million	12	36 Years
XX Technology Co.	Electronic industry	NTD 28 million	60	10 Years

## 6. Conclusions

### (1) Findings In This Study

To ensure complete and correct data collected and realize enterprises' business status, we adopted interviews, semi-structured questionnaire, collections and analyses of data files, and practical observation, using auxiliary techniques like sound recording at interviews with small and medium enterprises' business operators for over one hour. Despite discussions mainly emphasized in three functional areas of marketing, product design and R&D, and HR management in this study for the purpose of unearthing probable causes faced by domestic small and medium enterprises, the domestic small and medium enterprises are still good at manufacture competency, which corresponds to not only conclusions previously summarized by other scholars (Huilin Wu *et al.*, 1987; C. C. Lin, 1988; W. S. Tsai, 1997) but also investigations for relationships between the importance of manufacture competency perceived by small & medium enterprises and their realistic execution in Chapter 3, according to interviews with 6 companies belonging to industries with better and worse performance in three said functional areas discovered by the LSD multiple-comparison. From interviews with 6 companies classified to electronic industry, chemicals, and textile, only one of them can be categorized to the ODM level but other five stay in the OEM level. Until now, the major factors that these companies discussed in case

studies still have business consist in control of critical technologies in production and excellent manufacture competency, and employment of a small-quantity but diversified production strategy with flexible-adjusted manufacture equipment to demonstrate incredible flexibility in manufacture, strict-controlled quality, and segmentation from other emerging countries notwithstanding propositions small and medium enterprises confront a variable environment.

## **(2) Contributions Of This Study**

Divided into the academic level and the pragmatic level, the contributions for analyses of differentiations between small & medium enterprises' perception in enhancement of competitiveness and their execution are described as follows:

### **1. Academic**

1. Emphasized in four functional areas for marketing, R&D, manufacture, and HR of small & medium enterprises and acquired through literature reviews first, some indicators emphasized having effects on business performance can be investigated via pre-tests and questionnaires. In this regard, achievements in this study have some pioneering effects despite rare integrated exploration discovered in related research at home.
2. Based on analyses in statistic data collected from responded questionnaires, the differentiation between perception for importance and execution unobserved at the manufacture indicator only does match our perception for small and medium enterprises, i.e., small and medium enterprises growing from and thriving on OEM have their strongest advantages in manufacture competency. With the method of case studies integrated, the possible reasons causing said 9 indicators' differentiations between execution and perception within 3 dimensions of marketing, R&D and H&D as references of development of propositions and the semi-structured questionnaire have been investigated via reviews in literatures for small & medium enterprises at home and abroad.
3. As one innovative method and pioneering meaning in case studies at home and abroad, the industries with better or worse performance in three dimensions of marketing, R&D and HR discovered via responded questionnaires and the LSD multiple-comparison tests can be taken as references for companies selected for case studies. Along with interviews, semi-structured questionnaire, data and files collected and analyzed, and practical observation to really comprehend enterprises' business status and pragmatic problems confronted during execution of competitiveness indicators, this research manner with statistics and case studies integrated is never observed in relevant research for competitiveness with respect to small and medium enterprises and has practical meaning for improvement in these

enterprises' management and enhancement of companies' quality.

## **2. Pragmatic**

1. As a basis to investigate effects on importance of competitiveness indicators and business performance, the model for sources of Taiwanese small and medium enterprises' competitiveness developed via literature reviews in this study is able to prompt staged achievements.
2. Based on interviews with 6 companies selected, we realize that to have small-quantity but diversified niche products is indispensable for constant existence of one small or medium enterprise. As a result, an enterprise expecting to own niche for maintaining its existence shall have proper transition in business. During interviews, we comprehend that shortage or termination in sources of employees is one issue mostly concerned by these enterprises. Without technologies inherited, development of small and medium enterprises which ever drove Taiwan's prosperity economically will be doubted. This issue deserves the competent authorities' further reform in education or adjustment in values of the next-generation.
3. Derived from case studies, the main reasons causing problems in 9 competitiveness indicators with respect to domestic small and medium enterprises' competitiveness can be taken as references of improvement in quality of these enterprises constantly staying at Taiwan. The value in pragmatic applications can be concluded in this study.
4. Despite the government's good will, ten major assistance measures established for small and medium enterprises by the government have no significant effects or cannot save critical situations owing to restrictions in qualification or administrative process according to all interviewees' unanimous opinions which deserve the competent authorities' respects.

## **(3) Following Research And Recommendations**

With objects restricted in domestic small and medium enterprises only, the achievements in this study including expansion of available scopes, recommendations to the industry and the competent authorities, and recommendations to the following research, are shown as follows:

### **1. Expansion of available scopes**

With a model for research constructed on the basis of small and medium enterprises for investigations of sources of small & medium enterprises' competitiveness and reasons causing differentiations between perception of competitiveness indicators' importance and execution, this similar study can be implanted to research for other

industries via explorative analyses or case studies to find sources of competitive advantages and probable root causes resulting in defects.

## 2. Recommendations to the industry

As the main body in the process of Taiwan's economic development, Taiwanese small and medium enterprises directed by owners growing out of nothing and having achievements via constant efforts have common inclinations of conservative enterprise cultures verified during interviews with these 6 companies selected for case studies. However, confronting increasingly intensely-variable economic environment in the future, a small or medium enterprise's owner having more challenges in business shall consider to drive or set up learning-type organizations or enterprise structures, or introduce the knowledge management concept into operations of an enterprise as niche of one company's existence via constant innovation and reform.

## 3. Recommendations to the government sector

To fulfill complete Taiwanese small and medium enterprises' business, improved financial structure, enhanced R&D competency and expanded markets at home and abroad, the Small and Medium Enterprise Administration, Department of Labor, and Bureau of Foreign Trade of M.O.E.A. have supplied ten major assistance systems. Despite the government's good will and benevolent policy, these enterprises have few inclinations to apply for assistance or low probabilities to accept assistance due to their scales, manpower, or restrictions in qualification. To materialize assistance measures for small and medium enterprises, we recommend the government to facilitate or simplify administrative operations for these enterprises needing assistance.

## 4. Recommendations to the following research

With domestic small and medium enterprises as main objects in research, the model of this study adopting large-size samples for quantitative research and multiple case interviews for qualitative research can be further expended to the following research for investigations of root causes generating differentiations between perception of competitiveness indicators respected by different industries and their execution by employment of quantitative exploration analyses and qualitative case interviews. Having this research model, we are able to construct Taiwanese different industries' characteristics with respect to competitive advantages and further comprehension in their properties as references of a country's overall industrial development. Nevertheless, restricted in time, space, manpower, and resources originally, this study focusing on analyses composed of sources of competitive advantages and differences between perception and execution in domestic small and medium enterprises' competitiveness shall be expanded to other industries (high-tech industry or service industry) at home for further analyses and diversified industrial research that will contribute Taiwan's industrial development policy and the annual growth rate of GDP.

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