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**PLS Path Modeling of Business Performance:  
A Case Study of SMEs Entrepreneurs in Northern Region Thailand**

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**Abstract**

The research study of PLS Path Modeling of Business Performance in building competency in the competitiveness of small and medium enterprise entrepreneurs in the upper northern region were (1) to study the primary influential causes managerial innovation, shared values, business strategy and business competency which have direct and indirect effects on the overall performance of enterprise entrepreneurs by Path Modeling (2) to classify the competency of enterprise entrepreneurs in the competition by sex status, age, educational background, business location, working experiences and business expansion. (3) to identify issues and constraints confronted by small and medium enterprise entrepreneurs in business operation as a whole.

The analytical technique for the study is in the form of both descriptive and inferential statistics. The population for this study is consisting of 44,155 small and medium entrepreneurs from the available financial reports of 5 provinces, including profit and loss statement and balance sheet from the Province Commercial Register applying Taro Yamane random sampling technique of 1,700 entrepreneurs and questionnaire as the research tool of 872 corresponded questionnaire representing 51.29. The data analysis is carried out by available statistic programs to identify the percentage, means, standard deviations, multivariate analysis of Variance (MANOVA) and Partial Least Square: PLS Graph.

The study reveals the proportion of female and male entrepreneurs is close to each another with the average of 30 to 40 years age group as their majority group. The majority of entrepreneurs are with undergraduate degree education with the second rank of the professional school education. In general, Most of the entrepreneurs are under the independent Entrepreneurship Register with 44.20% and follows by the Company Limited register with 31.70% and the most popular business type is Service Provider business.

The majority of entrepreneurs have business operation experiences of 4-6 years with the employee to business investment ratio of less than 10 persons representing 51.80%. The proportion of entrepreneurs with their own sourcing and with outsourcing of raw materials and packaging is 44.20 and 43.70%. Most of them provide own personal direct investment and with financial loans representing 39.70% with most of them are with register capital of over 2,000,000 Baht representing 38.90. Majority of them has the medium sales growth of 1% to 9% representing 49.70%.

The entrepreneurs competency impact factors are (1) Managerial Innovation (2) Shared Values and (3) Business Strategy of which all factors has positive impacts, i.e. any entrepreneur have managerial innovation, shared value and business strategy to support the entity's vision, mission and business objectives, including modern marketing strategy of customers focus tend to also have an outstanding business competency. The research outcomes are in line with the hypothesis assumption and within the standard deviation at significant level of 0.5.

In summary, the research study reveals the above formula and outcomes are inline with the literature review at the endogenous variance level of R2 with high value of .877-.909. All effects are of statistical significance, in particular on the business strategy effects to the business performance with the significant level of .09 (<10).

**Key words:** Business Strategy, Business Performance, Competitiveness of SMEs, Competency, Entrepreneurs. SEM.

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## Introduction

At present, the entrepreneurship is quite popular in Thailand society. The global economic crisis impacted the local business and leads to the decrease of employment. Individual has to turn to new business opportunities and alternative careers to sustain their financial security and stability. (Abuja and Lampert, 2001, pp. 521-543) So it can be cited that entrepreneurship is one of the key economic force and plays a critical role in the modern business circle in innovating and creating new products to compete with both local and overseas markets which in turn are generating the economic growth in various aspects. (Brown and Duguid, 1991, pp. 40-57) Hence, the entrepreneurship is much more precious than innovation, investment and other resources in business. The successful entrepreneur is capable in developing the new evolutionary knowledge and technology from his own existing experiences and from the local know-how and experience through the networking engagement to appreciate the impacts of local geographic environment and local social activities. (Chow, Harrison, McKinnon and Wu, 2001, pp.1-28)

Currently, there are over 2,034,008 SMEs entrepreneurs spreaded throughout Thailand. These entrepreneurs are the key base driving force of the country economy. They are consisting of approximately 265,401 of One Tambon One Products (OTOPs), 1,995,929 of SMEs and 10,599 of Large Enterprises.

Despite this observation, the existing entrepreneur theory is still sound and applicable to the actual situation. But current business world has been evolved and is much different from the past, in particular on the rapid change of the external environment. (Hisrich, Peters and Shepherd, 2005) The overall elements that effect the change are the economic status, the social evolution, internal political situation, the protests / strikes, the global warming issue, the highly severe competitive market and the variety of innovations. (Frederick, Kuratko and Hodgetts, 2006) Therefore, the modern entrepreneurs have various options in respond to the demand of relevant business stakeholders. For instance, the forecasted economic data of Thailand in year 2008 concluded the GDP growth of 4.5% with the trend of 3.0% for year 2009 which was on the downward trend effects on the overall private investments of the country with the decrease to 2% in year 2009. In turn, it led to the property crisis, domestic and international financial crisis and also pull down the exporting and services sectors.

Therefore, these entrepreneurs had to revise their strategies in order to sustain their businesses. Manager needed to review and analyze their previous performances in order to develop the new theories and to match them with their own industrial experience and inline with the evolved environment. These revised strategies then were to be transformed to operational practice by stretching on the core values, seamless communication of experience and participative team work. The senior leaders have to transfer through the corporate culture in driving the organization toward the business goal. This corporate culture factor could not be separated from it's social, economic and competition factors.

### **Research Objectives**

1. Study the business strategies in building competency of the competitiveness of small and medium enterprise entrepreneurs and classify these entrepreneurs by sex, status, age, educational background, office location, business type, working experiences and by industry.
2. Study the primary influential causes of managerial innovation, shared values, business strategy and business performance, including the issues and constraints of entrepreneurs in business performance

### **Research Scope**

This research study had 4 scope criteria as follows:

1. Scope on Subject Content: The study focused on the business strategy of small and medium entrepreneurs.
2. Scope on Timeline: The duration of the study was 4 months from June 2009 till September 2009.
3. Scope on Area Coverage: The study covered the Northern Region (Lampang, Lamphun, Chiangmai, Chiangrai and Prayao).
4. Scope on Population Coverage: The study covered on small and medium entrepreneurs within 5 Northern Region provinces.

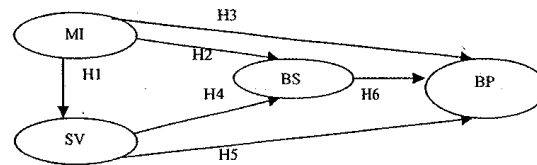
### **Anticipated Benefits**

The study is anticipated to yield benefits to the SMEs entrepreneurs on their strategic management in utilizing their competency to ensure their survival under the current regional economy crisis as follows:

1. The research study promoted the learning process and the knowledge management among the 5 province SME entrepreneurs by means of sharing their experiences and know-how derived from their research among themselves.
2. The outcomes and results of the research study on the aspects of business strategy integration; international theories and practical implementation could be presented and shared with public sector at local level.

### **Conceptual Framework**

This research study focused on the BS of SMEs Entrepreneurs in 4 dimensions, i.e. (1) managerial innovation (2) shared values (3) business strategy and (4) business performance. The conceptual framework and the hypothesis were illustrated below:



**Fig. 1** Conceptual framework

### Hypothesis

- H1: Managerial Innovation effects on Shared Values
- H2: Managerial Innovation effects on Business Strategy
- H3: Managerial Innovation effects on Business Performance
- H4: Shared Values effects on Business Strategy
- H5: Shared Values effects on Business Performance
- H6: Business Strategy effects on Business Performance

### Research Approach

The study approach was to review relevant literatures on entrepreneurship theory in order to develop the research framework, theories and variation factors. The population for this study was consisted of 44,155 SMES entrepreneurs from the available financial reports, including Profit and Loss Statements and Balance Sheets from the Province

Commercial Register. The survey duration was 2 months with sampling group of 1,700 questionnaires were mailed to their mailing names and addresses and received 872 returned questionnaires representing 51.29%

### Data Analysis

This research used 2 elements as follows:

1. Descriptive Statistic: the analysis of entrepreneur profile of 5 provinces for frequency, percentage, means, standard deviation and multivariate analysis of variance (MANOVA)
2. Inferential Statistic: the equation structure model and Partial Least Square: PLS Graph [7] which was the analysis study of construct or concept correlations of each individual variance, including the direct effect and indirect effect variances classified by the direct and indirect impacts.

### Research Summary

The study revealed the proportion of male and female entrepreneurs was close to each other at 48.00% to 52.00% respectively with married status as their majority group and with the main average of 30 and 40 years age group representing 38.70%. This was in line with Zimmerer & Scarborough, Lerner, & Lamar, (2002) study which described the young male and female entrepreneurs with the education of Associate Degree or higher in a well established status had own clear defined vision, risk mitigation ability, innovative thinking, learning focus, desire to establish own business and unwilling to work under any form of supervision and the second rank was the average of 41 to 50 years age group.

The majority of entrepreneurs were with undergraduate degree education representing 41.20% with the second rank of entrepreneurs with the professional school education. This was in line with the study of Megginson, Byrd & Megginson (2003) stated the average education of small business entrepreneurs in America was undergraduate degree representing 38% and followed by the associate degree of 24%, professional training of 23% and master degree of 12% with the remaining 3% with high school education.

Most of the entrepreneurs were under the Entrepreneurship Register with 44.20% and followed by the Company Limited Register with 31.70%. The most popular business type was Service Provider representing 41.70% with the second rank of Industry Representing 31.20%

The majority of entrepreneurs had business operation experiences of 4-6 years representing 30.20%. The majority entrepreneurs had the employee to business investment ratio of less than 10 persons representing 51.80%. The proportion of entrepreneurs with their own sourcing and with outsourcing of raw materials and packaging were 44.20 and 43.70% respectively. Most of them provided their own personal direct investment or with financial loans representing 39.70% with most of them were with register capital of over 2,000,000 Baht representing 38.90 and the second rank was with register capital of 100,001 – 500,000 Baht representing 29.00%. Majority of them had the medium sales growth of 1% to 9% representing 49.70%.

The study revealed that the gender and education background of the SMEs entrepreneurs had no difference toward the business strategy for competitiveness with the exception of other factors, i.e. age, educational background, office location, business type, working experience and industry which with the statistical significance of 0.5.

The average means of the competency in the competitiveness of SMEs entrepreneurs were high on 4 key factors of MI, SV, BS and BP were 4.12, 4.07, 4.05 and 4.02 and the standard deviation were 0.60, 0.66, 0.57 and 0.62 respectively.

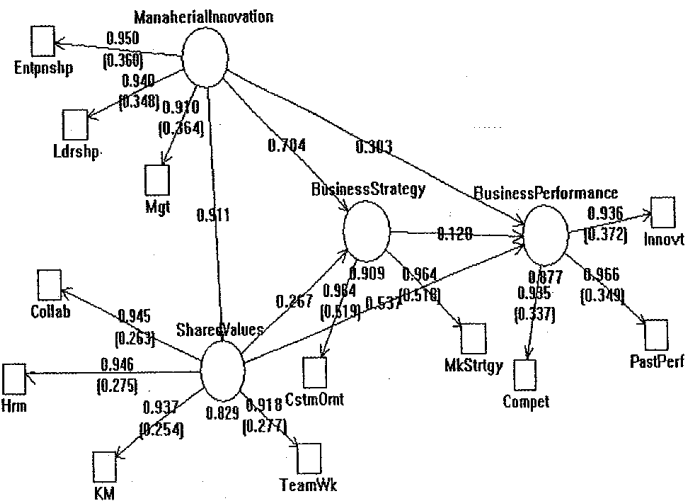


Fig. 1 Final Model

**Remarks:** Fig. 1 the blanket represent the indicator loading. The regression loading for the analysis of outer formative model and were not used in this case as they are outer reflective model. Circles represent the construct of linked indicators, the link line between the construct represent the coefficient route, beneath endogenous construct represent the  $R^2$  value.

Fig. 2 dependent Variable

Dependent variable	$R^2$	effect	Independent variable		
			Managerial	Shared	Business
Business Performance: BP	0.877	Total Effect	0.906	0.922	0.895
		Direct Effect	0.303***	0.537***	0.120**
		Indirect Effect	0.642**	0.032**	0.000
		Unanalyzed Effect	-0.039	0.353	0.775
Business Strategy: BS	0.909	Total Effect	0.947	0.908	N/A
		Direct Effect	0.704***	0.267***	N/A
		Indirect Effect	0.243**	0.000	N/A
		Unanalyzed Effect	0.000	0.641	N/A

Direct Effect	0.911***	N/A	N/A
Indirect Effect	0.000	N/A	N/A
Unanalyzed Effect	0.000	N/A	N/A

TE = Total Effect, DE = Direct Effect, IE = Indirect Effect, UE = Unanalyzed Effect,

\*\*\*p < .01, \*\* p < .05

From: Structure Equation Modeling Analysis, PLS-Graph Program

**Fig. 3** Hypothesis result summary

Hypothesis	coefficient	t-stat	conclusion
H1: Managerial Innovation effected on Shared Values	0.911	12.016***	support
H2: Managerial Innovation effected on Business Strategy	0.704	21.447***	support
H3: Managerial Innovation effected on Business Performance	0.303	4.249***	support
H4: Shared Values effected on Business Strategy	0.267	8.479***	support
H5: Shared Values effected on Business Performance	0.537	10.487***	support
H6: Business Strategy effected on Business Performance	0.120	1.701***	support

Fig. 1, Fig. 2 and Fig. 3, BS was the good mediators to link MI and SV to BP. It discovered that SV had direct effected from BS over MI, but also discovered that MI had effected to SV and then indirect effected to BS at high level. It was the result of the organization planed behavior in consistently guiding senior leaders, staff and relevant stakeholders to drive and activate innovation in formal manner. (Frederick, Kuratko and Hodgetts, 2006) In order to achieve the organization target, the Managerial Innovation must be available to promote each staff's personal learning and personal development (Sense, 1998, pp. 11-12) through the various activities programs and projects by setting the joint business targets focusing in cost management and information management and to be cascaded down from organization level to individual staff level. (Hult and Ketchen, 2001, p. 2) It had cited that the managerial innovation was the key important basis in promoting and generating the creative and innovative ideas of which in turn would add value to the future business operation and would enable to mitigate the business risks by coordinating with other relevant businesses. (Robbin, 2004, p. 214)



The second factor of SV had more effect on the BP than all other factors by having higher effect than MI by approximately 2 folds and higher than BS by 4.5 folds. Table 1 also illustrated SV had very higher effect as the result of the overly high of indirect effect of MI of 10.487. In addition, SV also had the direct effect on MI of 0.032 which could be interpreted that any organization with well administration, steady progression, strong leadership and good entrepreneurship would generate high shared valued within the organization in form of modernized knowledge learning, personnel development and team work environment. In addition to knowledge enhancement, it also enhanced cooperation and friendship spirit that would lead to the high competency organization. The development of administration effectiveness in parallel with share value within the organization was evitable (Wingwon, 2007, p. 59) despite the facts that share value or organization culture was intangible, but each individual and team member could utilize and integrate at operation level which in turn could strengthen the competition competency of the team in the future. Hence, the share value and organization culture transformed to be the key administrative tools (Wheelen and Hunger, 2006, p. 145; Hurley and Hult, 1998) that indicated the strength and weakness of organization competitiveness in our current business world with variety of cultures in term of internal and external approach to team working, individual involvement and leadership approach toward crisis management. (Chow, Harrison, McKinnon and Wu, 2001)

The third factor of BS had positive effect means that any organization with well managerial innovation, share value with their employees, well-defined marketing strategy and customer focus could guide the organization to higher competency level of which was the key indicator of organization success or failure. (Zoogah, 2006) Senior leaders could analyze the available key data and access their external environment in order to identify opportunities and threats to own organization and to constructively enhance their competitive advantages (Gregory and Lumpkin, 2003) and to effectively strengthen their competitiveness. (Coulter, 2005, p. 5; Wheelen and Hunger, 2006, p. 10)

In summary, the research study revealed the above formula and outcomes were inline with the literature

review at the endogenous variance level of  $R^2$  with high value of .877-.909 (Fig. 3). All effects were of statistical significance, in particular on Business Strategy effects to Business Performance with the significant level of .09 ( $<10$ ) of which was at the level of international acceptance. The measurement model or outer model illustrated all indicators in the block had high convergent validity at significant level of over .707 and all have over .50 value at construct level (Fig. 6).

All constructs of  $\sqrt{AVE}$  had very high discriminant validity. All columns of  $\sqrt{AVE}$  had higher construct correlation with the exception of Column 1 in Fig 5. which had  $\sqrt{AVE}$  value of .933 but with one construct correlation of BS and BP at the value of .964 which was higher than .933 but at acceptable level and could be considered as having high discriminant validity.

Fig. 4 convergent validity

Construct, Items	Loading	AVE	t-stat
<b>Managerial Innovation: MI</b>			
Entrepreneurship	0.950	0.871	14.334
Leadership	0.940		18.172
Management	0.910		15.015
<b>Shared Values: SV</b>			
Collaboration	0.945	0.877	12.019
Human Resource Management	0.946		19.586
Knowledge Management	0.937		17.882
Teamwork	0.918		43.270
<b>Business Strategy: BS</b>			
Customer Orientation	0.964	0.929	28.891
Marketing Strategy	0.964		28.575
<b>Business Performance: BP</b>			
Competitive Performance	0.877	0.894	18.974
Past Performance	0.966		26.424
Innovation	0.936		2.0314

Fig. 5 Discriminant Validity and Composite Reliability

Construct	CR	R <sup>2</sup>	AVE	Construct			
				MI	SV	BS	BP
Managerial Innovation: MI	0.953	0.000	0.871	0.933			
Shared Values: SV	0.966	0.829	0.877	0.911	0.936		
Business Strategy: BS	0.963	0.909	0.929	0.947	0.908	0.964	
Business Performance: BP	0.962	0.877	0.894	0.906	0.922	0.895	0.946

Note: figure in main diagonal  $\sqrt{AVE}$  was the indicator to measure Discriminant Validity of Construct

The reliability of overall measurement showed that all constructs with the composite reliability of over .60 and within the range of .953-.966 which could be translated that any response to individual construct for 100 times still got the same responded result at 95 to 97 times (Fig. 5).

## Conclusion

The study could be concluded that business strategy in building competency of the competitiveness of small and medium enterprise entrepreneurs had significant correlations, in particular on the Business Strategy (BS) to Business Performance (BP) with the significant level of .09 of which confirmed that organization with sound business strategy inline with both internal and external environment, with good managerial innovation, with strong leadership skill, with effective share value with high team work spirit, with human resource management, with knowledge management and with customer focus marketing strategy would lead business to higher competency and in turn to strengthen the competitiveness of the organization.

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