THE FACTORS AFFECTING THE PERFORMANCE OF SMALL AND MEDIUM MANUFACTURING ENTERPRISES IN THAILAND

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ABSTRACT

Title of Dissertation	The Factors Affecting the Performance of Small and Medium Manufacturing Enterprises in Thailand
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SMEs have an essential role in driving the economics of Thailand, especially the manufacturing sector. Manufacturing SMEs are regarded as a significant sector for long-term development because they can play an important role in sustainable economic development, which can reduce the dependency on foreign investment. However, manufacturing SMEs suffer from low performance compared to SMEs in the service and trade sector. Therefore, this research aimed to study the factors affecting the performance of manufacturing SMEs based on organizational resource theory, such as the resource-based view and population ecology theory. The research design was mix-method, composed of multiple linear regression and in-depth interviews. The quantitative methods used identified the factors affecting the performance of manufacturing SMEs, and the qualitative method aimed to confirm, expand, and explain the reasons why these factors have an influence on firm performance. In the last chapter, the findings from the two methodologies will be discussed and recommendations for government agencies will be presented.

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My dissertation would never have been completed without the assistance of the owners and managers of manufacturing firms that I interviewed. They sacrificed their precious time for the interviews and revealed valuable information for this research.

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CHAPTER 1

INTRODUCTION

Small and medium enterprises (SMEs) play a significant role in most countries, especially in developing countries. In countries around the world, SMEs represent one of the sectors that have been focused on by government as a challenge for improving the well-being of society. In 2015, the World Bank indicated that SMEs in all countries in the world accounted for 45 percent of total employment and 33 percent of gross domestic income (GDP). Additionally, in the next 15 years, the World Bank estimates that 600 million jobs will be required because of the growth of the population in Asia and Sub-Saharan African. SMEs have been thought to contribute to four out of five new positions. Therefore, SMEs have a vital role in terms of their contribution to income distribution, resource utilization, and employment creation in developing countries.

In Thailand, the Office of Small and Medium Enterprises Promotion (OSMEP) has reported that SMEs contributed to 41.1 percent of the overall GDP while the target was 51 percent in 2015. In the other words, SMEs could not meet the target in 2015. Furthermore, SMEs accounted for 80.44 percent of total employment. In the other words, SMEs created jobs for 10,749,735 people while there were 13,363,054 from the overall job creation. in 2015. It can be seen that SMEs are important for the Thai economy as a driver for economic and employment growth.

In order to achieve sustainable development, domestic manufacturing SMEs are regarded as a significant sector for long-term development because they are an important part of sustainable economic development, which can reduce dependency on foreign investment and large enterprises. However, the manufacturing sector has seen the most disappointing performance while SMEs in the service and trade sectors have succeeded in improving their GDP contribution.

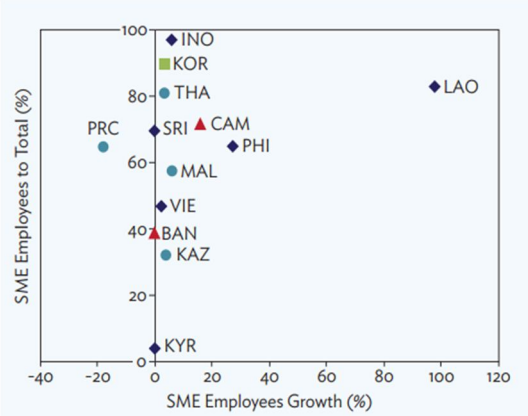
Many developing counties have established a government program to support SMEs. However, compared to larger firms, SMEs often face barriers. Levy, Albert,

Jeffrey (1999) for example found that the economic performance of less-developed countries has relied on the SME sector while more-developed countries have relied on larger enterprises than SMEs. Therefore, the performance of the SME sector has a high impact on the GDP contribution of emerging countries. From an economic perspective, manufacturing SMEs increase industrial flexibility, develop technological products, generate income and employment, and decrease wage inequality. From a social perspective, SMEs contribute to individual feelings, participating in governance and institutionalize democracy (Fisher & Reuber, 2000).

The importance of manufacturing SMEs is now widely recognized by policymakers in international forums, and policymakers also debate about the related factors and the environment that could enhance manufacturing SMEs' competitive advantage. Although manufacturing SMEs are significant, they typically have limited resources (Lotfizadeh & Shamsi, 2015). Because of the resource limitations of manufacturing SMEs, most governments in developing countries attempt to identify the factors that can improve the capability of manufacturing SMEs and implement programs that can encourage manufacturing SMEs to achieve their goals.

1.1 Statement of Significance of the Problem

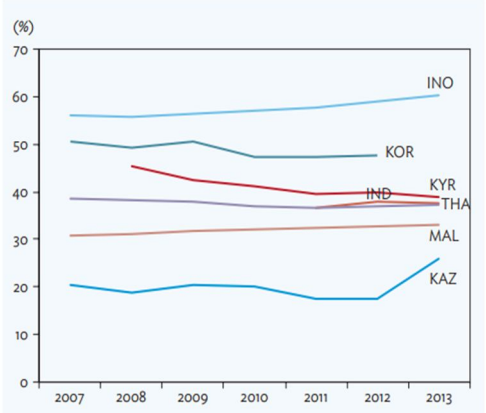
SMEs are regarded as a backbone of the local economy in most countries because SMEs contribute to the GDP and they account for a majority of employment numbers. However, compared to other countries in Asia, it can be seen that the growth of SMEs in Thailand in terms of economic contribution and the number of employed individuals is less than in other Asian countries.



BAN = Bangladesh, PRC = People's Republic of China, CAM = Cambodia, INO = Indonesia, KAZ = Kazakhstan, KYR = Kyrgyz Republic, KOR = Republic of Korea, LAO = Lao PDR, MAL = Malaysia, PHI = Philippines, SME = small and medium-sized enterprise, SRI = Sri Lanka, THA = Thailand, VIE = Viet Nam.

Notes: ■ refers to high-income country, ● refers to upper middle-income country, ◆ refers to lower middle-income country, and ▲ refers to low-income country. Country classification refers to the World Bank classification for FY2015. Data points in time: 2011 in PRC; 2012 in BAN, KOR, PHI, and VIE; 2013 in KYR, MAL, INO, LAO, SRI, and THA; 2014 in CAM and KAZ.

Figure 1.1 Employment of SMEs



GDP = gross domestic product, IND = India, INO = Indonesia, KOR = Republic of Korea, KAZ = Kazakhstan, KYR = Kyrgyz Republic, MAL = Malaysia, SME = small and medium-sized enterprise, THA = Thailand.

Notes: Data combined SMEs, individual entrepreneurs, and farmers in KYR. Gross value added in manufacturing in KOR.

Figure 1.2 SME Contribution to GDP

Source: Asian Development Bank, 2014.

In 2014, the growth of the employment of SMEs in Malaysia, the Philippines, Cambodia, Indonesia, and Lao PDR was greater than in Thailand. The growth of employment in the Lao PDR was double, while the growth of employment in Cambodia and the Philippines was around 20 percent (Figure1.1). Moreover, from 2007 to 2013 the proportion of the GDP of Thai SMEs tended to steadily decrease, while other countries such as Indonesia, Malaysia, and Kazakhstan had an upper trend. Additionally, the SMEs in the Republic of Korea has contributed an average around 50 percent of total GDP (Figure1.2). Conversely, Thai government set the target that the proportion of GDP in SMEs should be at least 51 percent.

Among three major economic activities including trade sector, service sector and manufacturing sector, the growth rate of manufactuing SMEs performed the worst. The Office of Small and Medium Enterprises Promotion (OSMEP) reported as seen in Figure 1.3 that the manufacturing sector created the lowest proportion and tended to decrease. The proportion of the SME GDP value in the trade and maintenance sector slightly increased from 28.3 percent in 2007 to 29.4 percent in

2015. The proportion of the SME GDP value in the service sector gradually rose from 38.8 percent in 2007 to 41.4 percent in 2015. However, the GDP in the manufacturing SME sector dropped from 25.4 percent in 2007 to 22.1 percent in 2015.

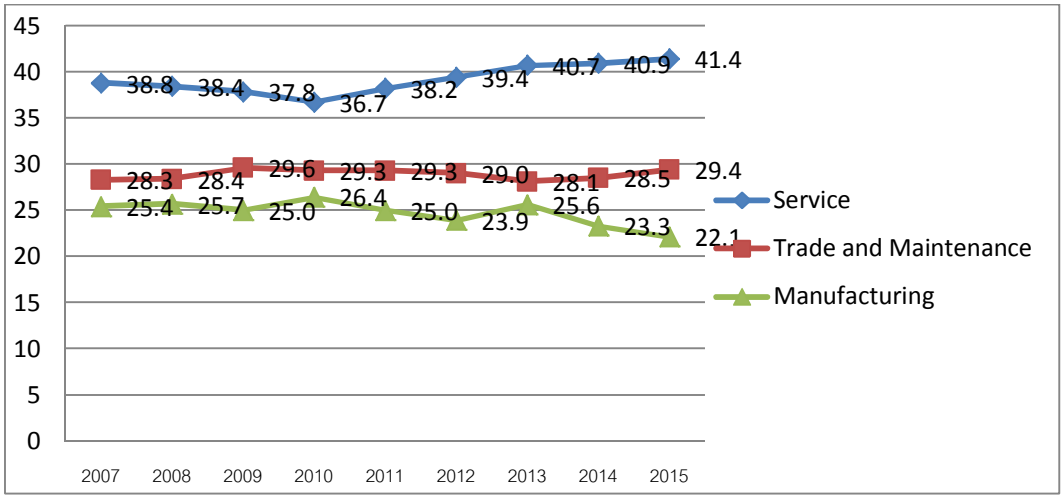


Figure 1.3 Proportion of GDP Value Classified by Major Economic Activity 2007-2015

Source: Office of Small and Medium Enterprises Promotion, 2016.

It can be seen that the SMEs in the manufacturing sector should improve so that they can contribute more to GDP value. Compared to the service sector, SMEs contributed to 41.4 percent of the total while the manufacturing sector generated only 22.1 percent of the total in 2015. Nonetheless, the job creation in the manufacturing sector also showed that there was no employment growth in this sector. In Thailand, the proportion of employees in manufacturing SMEs dropped from 38.9 in 2007 to 23.7 in 2013 while the proportion of employment in trade and service increased from 27.3 in 2007 to 31.7 in 2013 and 33.8 in 2007 to 44.1 in 2013. It can be seen in Table 1.1 that the overall picture of SMEs steadily increased both in terms of employment numbers and GDP contribution. SME employment numbers increased from 8,900,567 in 2007 to 11,414,702 in 2013 in Thailand. However, the trend of SMEs in the manufacturing sector was the opposite overall. The employment numbers decreased from 3,462,321 in 2007 to 2,705,285 in 2013.

Table 1.1 SME Numbers, Employment, and GDP from 2007-2013 in Thailand

Year	2007	2008	2009	2010	2011	2012	2013
SMEs (number)	2,366,227	2,827,633	2,896,106	2,913,167	2,652,854	2,739,142	2,763,997
SMEs to total (%)	99.6	99.7	99.8	99.6	99.8	97.2	97.2
SMEs growth (%)	3.3	19.5	2.4	0.6	-9.2	3.2	1.2
Trade (% to SMEs)	41.1	46.7	47.4	47.5	44.5	43.6	43.5
Service (% to SMEs)	30	33.8	33.7	33.8	37.7	38.7	39.1
Manufacturing (% to SMEs)	28.2	19.3	18.9	18.7	17.8	17.7	17.4
Employment by SMEs							
SME employees (number)	8,900,567	…	9,701,354	10,507,507	10,995,977	11,783,143	11,414,702
SME employees to total (%)	76		78.2	77.9	83.9	81	81
SME employees growth (%)	3.1			8.3	4.6	0.5	3.3
Trade (% to SME employees)	27.3		30	30.9	34.8	32	31.7
Service (% to SME employees)	33.8		35.8	35.8	35.6	44.1	44.1
Manufacturing (% to SME employees)	38.9		34.2	33.3	29.6	23.9	23.7
SMEs Contribution to GDP							
Nominal GDP of SMEs (B bil.)	3,298,529.40	3,457,685.30	3,417,860.70	3,746,967.00	3,859,587.60	4,211,262.70	4,454,939.60
SME contribution to GDP (%)	38.7	38.1	37.8	37.1	36.6	37	37.4
GDP Composition of SMEs (% to SME GDP)							
Mining	1.5	1.7	1.6	1.7	1.8	1.9	1.9
Manufacturing	30.7	32	30.4	32.3	31.2	30.9	29.6
Construction	6.3	6.2	5.9	5.9	5.8	6	5.8
Trade and maintainance	29.1	28.5	29.9	28.3	28	27.7	27.7
Service	32.2	31.4	32	31.6	33	33.3	34.8
Electricity, gas and water supply	0.2	0.2	0.2	0.2	0.2	0.3	0.3

Source: Adapted from Office of Small and Medium Enterprises Promotion, 2010, 2012, 2014, 2015.

In 2014, the Office of Small and Medium Enterprises Promotion SME improved and adjusted the database of numbers of SMEs categorized by size, the database of SMEs categorized by economic activity, and the method of calculation of employment. Therefore, the numbers that are shown in the official papers after 2014 changed. Although manufacturing SMEs in Thailand have shown better GDP contribution every year, service SMEs and trade and maintenance SMEs have shown a better trend in terms of GDP growth. Table 1.2 shows that manufacturing SMEs improved from 1,108,629 billion baht in 2011 to 1,225,919 billion baht in 2015. Manufacturing SMEs added only 117,290 billion baht. At the same time, service SMEs improved at around 601,756 billion baht while trade and maintenance SMEs added around 332,673 billion baht. In 2015, manufacturing SMEs contributed the least GDP at 1,225,919 billion baht compared to other sectors, while trade and maintenance SMEs and service SMEs contributed 1,632,386 billion baht and

2,299,546 billion baht respectively. A high rate unemployment and weak employment growth often reflect an economy's incapacity to adapt to change. While the government establishes incentives and framework conditions, the private sector is in charge of the implementation. The differences among firms can be seen as imminent in terms of employment. In the other words, the job creation of SMEs contributes to income distribution in the economic system (The Organisation for Economic Co-operation and Development [OECD], 2002). However, manufacturing SMEs in Thailand created only 504,567 jobs while trade and maintenance SMEs and service SMEs showed job creation at 1,170,488 1,054,675 respectively in 2015.

Table 1.2 SME Employment and GDP Categorized by Major Economic Activities from 2011-2015 in Thailand

	2011	**2012**	**2013**	**2014**	**2015**
GDP of SMEs (Manufacturing)	1,108,629	1,169,030	1,202,029	1,218,434	1,225,919
GDP of SMEs (Trade and Maintenance)	1,299,713	1,417,769	1,433,234	1,489,848	1,632,386
GDP of SMEs (Service)	1,697,790	1,924,994	2,073,202	2,141,090	2,299,546
Employment of SMEs (Manufacturing)				499,298	504,567
Employment of SMEs (Trade and Maintenance)				1,162,639	1,170,488
Employment of SMEs (Service)				1,041,758	1,054,675

Source: Office of Small and Medium Enterprises Promotion, 2017b..

Therefore, if manufacturing can improve competitiveness and performance, it can also create a larger GDP and more employment. Therefore, this research will investigate the factors that affect SMEs in terms of increasing SME performance.

Additionally, practical SME policy is not only to increase the domestic income but also to improve the job creation in Thailand.

1.2 An Overview of SMEs in Thailand

Before the Thailand economic crisis in 1997, the promotion of the SME sector was ignored. The government focused on large industries and foreign direct investment. However, Thailand's industry structure highly depended on imports. The collapse of large industries was the reason why attention turned to SMEs. SMEs are the sector that is the most important in the economy because they account for the majority of employment and generate almost half of the GDP. Moreover, it is an important factor for long-term economic development (Sevilla & Soonthorndhada, 2000).

On the other hand, the economic crisis in mid-1997 also impacted Thai SMEs. Harvie and Lee (2002) explained that foreign debt was nearly 74 billion US dollars belonging to private the sector, while the total foreign debt of Thailand was 90.5 billion US dollars. The stock market also fell to 310 from over 1200 points. Moreover, the government decided to float the value of the Thai baht and it weakened from 25 to the US dollar to the lowest at 56.2 to the US dollar in January 1998. There are five effects on SMEs. Fifty-six financial firms and six commercial banks closed because of non-performing loans (NPLs). Therefore, financial and banking institutions set more adequate regulations on lending in the private sector. This economic crisis caused at least five impacts on SMEs. First, the reform of lending regulations and high interest rates made it difficult for small companies to access sources of funds. Secondly, SMEs were forced to be possessed by foreign companies or become bankrupt because of foreign debt and the weakness of the Thai currency. Thirdly, the International Monetary Fund (IMF) and World Bank loan commitments required liberalism of the Thai market. The government had to allow foreign companies to penetrate the Thai market even at the small supplier level. Fourthly, large companies reduced their cost by pressuring small suppliers rather than assisting with technology or in developing human resources. Lastly, the new standard of

cooperate governance in Thailand affected the lending practices of financial institutions and the transparent manner of operation of small firms.

Table 1.3 Main Economic Policy and SMEs Events

Year	Main Economic Policy & SMEs Events	Results
1997	Adoption of floating exchange-rate regime Financial assistance from the IMF, the World Bank, and the Asian Development Bank	
1999	Dual track development strategy Competition Act enforced by Trade Competition Commission.	
2000	Adoption of inflation-targeting framework	
2001	New government puts emphasis upon carrying-out existing Master Plan for the reform of State-owned enterprises. Creation of Office of SME Promotion (OSMEP).	
2002	1st Master Plan for SMEs (2002-06) Adoption of SME Bank Act. . New Framework for Fiscal Sustainability	SME GDP accounted for 39.4 percent in 2006 while the target was 50 percent of overall GDP. SMEs created 67,909 positions per year while the goal was 180,000 per year.
2003	OSMEP's operations begin. Creation of ARMEC Forum.	
2004	National Science and Technology Strategic Plan (2004-13). National Telecom Commission becomes independent regulator. Tsunami (December).	

Table 1.3 (Continued)

Year	Main Economic Policy & SMEs Events	Results
2005	Telecom Master Plan (2005-07). United Nations Year for microfinance. Easier access to basic health services. Easier access to financial funds. Departure of Prime Minister Thaksin. Stock market crash. Introduction of capital controls	
2007	2nd Master Plan for SMEs (2007-11). 10th National Economic and Social Development Plan (2007-11). New parliamentary elections: return of Thaksin's allies. New Constitution strengthening powers of the judiciary branch and unelected government officials. Adoption of the 8-digit Commodities Classification Code (ASEAN), harmonized tariffs (AHTN).	SME GDP accounted for 37.1 percent in 2006 while the target was 42 percent of overall GDP. Growth of SME exports was lower than the overall export growth rate. Total export rates were 13.8 percent in 2010 compared with SME export rates of 10.4 percent in 2010.
2009	Downgrading of Thailand's sovereign local currency debt. Adoption of two-stage fiscal stimulus program. Creation of Commission on Intellectual Property Protection.	
2010	Extension of debt moratorium for 500,000 farmers. Proposed bill on reform of land and property taxation	

Table 1.3 (Continued)

Year	Main Economic Policy & SMEs Events	Results
2012	3rd Master Plan for SMEs (2012-16). 11th National Economic and Social Development Plan (2012-16)	SME GDP accounted for 41.1 percent in 2015 with a growth rate of 5.3 percent. The highest growth sector was the tourism business, construction business, wholesale and retail business and logistics.

Source: Adapted from OECD, 2011 and Office of Small and Medium Enterprises Promotion, 2017.

In order to improve the potential of SMEs, the government launched the "Dual Track Development Strategy" to support both large firms and SMEs in 1999. Previously, the government focused on large firms and export models that lead to an imbalance in the economic structure. The Dual Track Development Strategy was an approach to stimulate mass manufacturing products from multinational corporations and a skill-driven SME sector. In 2002, the government introduced the First Master Plan for the Promotion of Thailand's Small and Medium-sized Enterprises (2002-2006) and adopted the SME Bank Act. Although the results could not reach the goals, the government was still concerned with SMEs as one of the important sectors and launched the Second Master Plan for the Promotion of Thailand's Small and Medium-sized Enterprises (2007-2011) in 2007 and the third Master Plan for the Promotion of Thailand's Small and Medium-sized Enterprises (2012-2016) in 2012. In Table 1.3, a Calendar of the Main Economic and SME events, it shows that SMEs were not officially promoted by the government until 1999 and the master plan for SMEs was only introduced in 2002.

In 2015, the number of all business enterprises in Thailand reported by the Office of Small and Medium Enterprises Promotion (OSMEP) was 2,765,986 SMEs, which was 99.72 percent of the total enterprises. Small enterprises accounted for

2,753,058 enterprises or 99.26 percent of the total enterprises. SMEs were composed of 1,170,488 enterprises in the trading sector, 1,054,675 enterprises in the service sector, 504,567 enterprises in the manufacturing sector, and 36,236 enterprises in the agriculture sectors. The large portion of SMEs makes it clear that SMEs are one of the most important economic sectors in Thailand's economics because they have the largest proportion in terms of numbers.

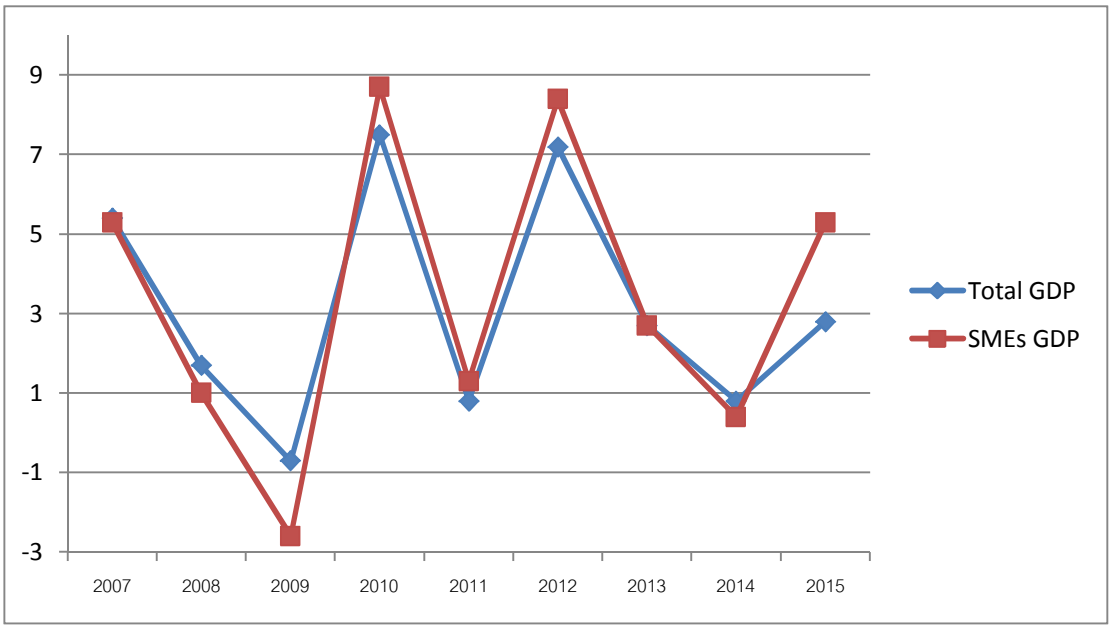


Figure 1.4 Total GDP and SME GDP Growth Rate Year 2007-2015
Source: Office of Small and Medium Enterprises Promotion, 2017b.

In Figure 1.4 it can be seen that the total GDP and SME GDP have the same trend. Therefore, the growth of SMEs also depends on the national economic situation. However, the OSMEP has indicated that the higher growth of SME GDP is stimulated by the tourism sector and the service sector. In the other words, manufacturing SMEs had the lowest GDP compared to other sectors. In 2015, the total GDP amounted to 13,533,596 billion baht and the non-agriculture sector accounted for 90.9 percent or 12,296,287 billion baht. SMEs accounted for 5,559,534 billion baht, representing 41.1 percent of the overall GDP in the non-agriculture sector.

Table 1.4 Proportion and Growth Rate of Total GDP and SMEs GDP Classified by Economic Activity Year 2015

Economic Activity (Non-Agriculture sector)	Country		SMEs	
	Proportion to total GDP (percentage)	Growth Rate (percentage)	Proportion to SME GDP (percentage)	Growth Rate (percentage)
Manufacturing	26.9	+0.9	22.1	+0.9
Trade and Maintenance	15.1	+4.3	29.4	+4.3
Service	40.0	+5.1	41.4	+6.9
Mine, Construction, Electricity, Gas and Water Supply	8.8	+6.7	7.1	+12.7

Source: Office of Small and Medium Enterprises Promotion, 2017b.

Although the growth of the total GDP and SME GDP showed an upward trend, it can be seen in Table 1.4 that the growth rate of SMEs in the manufacturing sector was the lowest at 0.9 percent while trade and maintenance SMEs and service SMEs grew at 4.3 percent and 6.9 percent respectively.

1.3 Why Are Manufacturing SMEs Important to Thailand?

The SMEs in the manufacturing sector still have a gap to fill and have an opportunity to share a greater proportion of the GDP. The SME manufacturing GDP showed steady growth from 1,110,190.22 billion baht to 1,227,646.18 billion baht in 2015. The proportion of SME manufacturing to total manufacturing GDP has never changed because it has accounted for 33.7 percent since 2011, while the proportion of the manufacturing GDP to total GDP decreased from 29.2 percent in 2011 to 26.9 percent in 2015, as shown in table 1.5.

Table 1.5 The Distribution of GDP in Manufacturing Sector 2011-2015

GDP Value	2011	2012	2013	2014	2015
Total GDP (billion baht)	11,300,485	12,349,026	12,901,498	13,132,234	13,533,596
Manufacturing GDP (billion baht)	3,294,333	3,473,818	3,571,876	3,620,623	3,642,867
Proportion of Manufacturing GDP to total GDP (percentage)	29.2	28.7	27.7	27.6	26.9
SMEs Manufacturing GDP (billion baht)	1,110,190.22	1,170,676.67	1,203,722.21	1,220,149.95	1,227,646.18
Proportion of SME Manufacturing to total Manufacturing GDP (percentage)	33.7	33.7	33.7	33.7	33.7

Source: Office of Small and Medium Enterprises Promotion, 2017b.

Furthermore, the OSMEP has reported that the proportion of SMEs in the manufacturing sector has continually decreased. Figure 1.5 indicates that the proportion of the GDP of manufacturing SMEs still gradually decreased from 26.4 percent in 2010 to 22.1 percent in 2015. However, the GDP proportion of trade and maintenance SMEs steadily increased from 28.3 percent in 2007 to 29.4 percent in 2015. Although the GDP proportion of service SMEs dropped to 36.7 percent in 2010, it gradually increased to 41.4 percent in 2015.

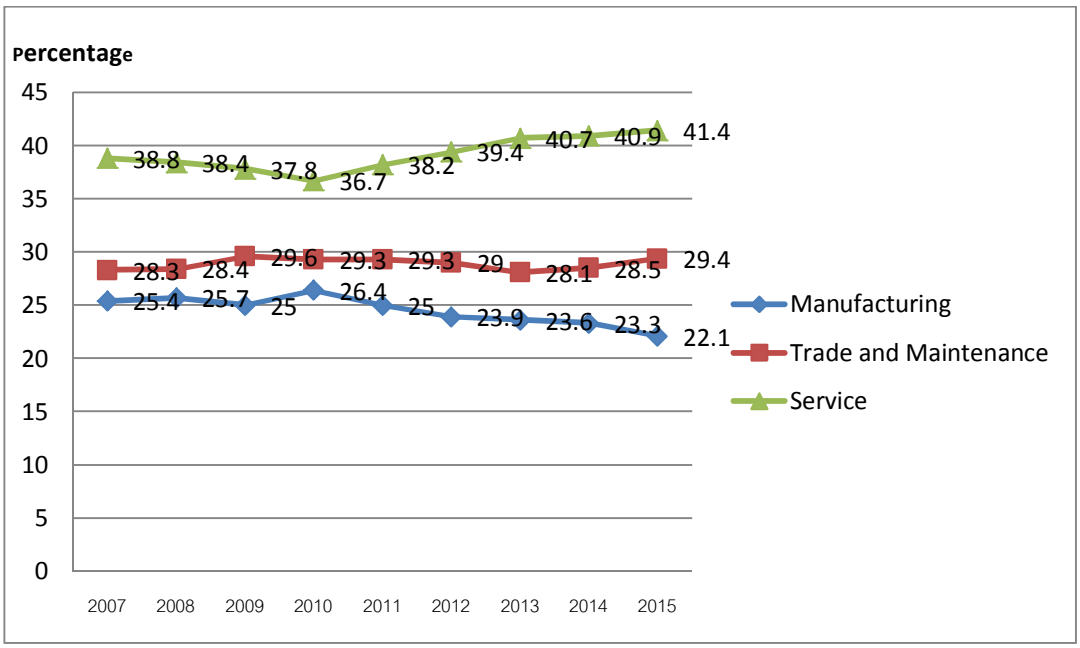
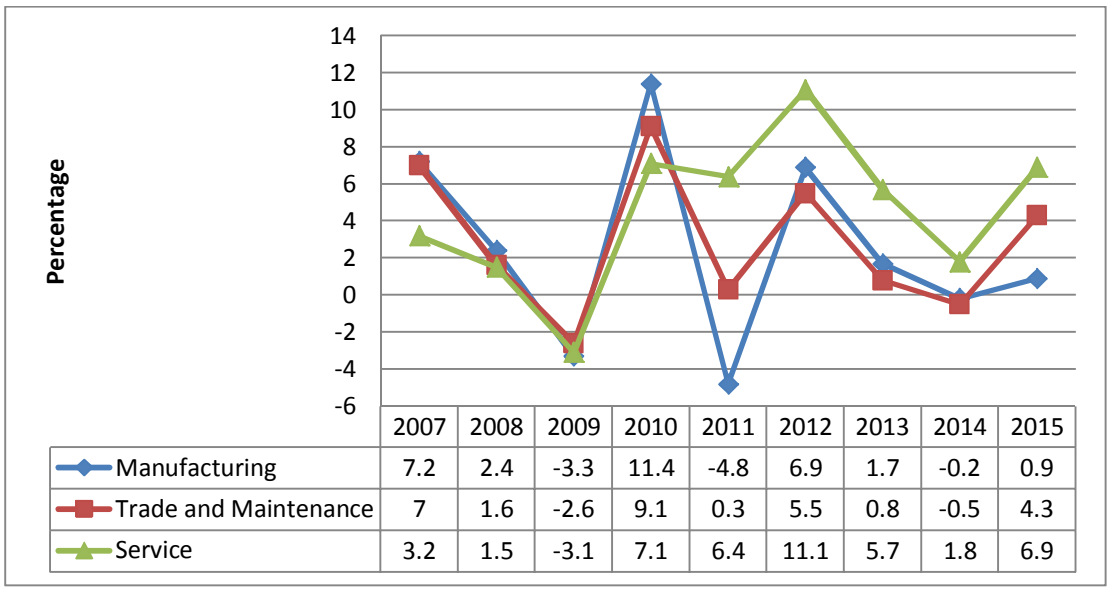


Figure 1.5 Manufacturing SME GDP Proportion Trend to SMEs GDP Year 2007-2015

Source: Office of Small and Medium Enterprises Promotion, 2017b.

Additionally, The GDP growth rate of manufacturing SMEs has shown a downward trend as seen in Figure 1.6. The proportion of the GDP of manufacturing SMEs in Thailand performed at only 1.7 percent, at minus 0.2 percent, and at 0.9 percent in 2013, 2014, and 2015 respectively. Compared to service SMEs, manufacturing SMEs have contributed a lower growth rate since 2011; for example manufacturing SMEs could not show a positive trend at minus 4.8 percent in 2011 while service SMEs performed at 6.4 percent and recorded the highest growth at 11.1 percent in 2012. Compared to trade and maintenance SMEs, manufacturing SMEs showed a lower growth rate at 0.9 percent in 2015 while trade and maintenance SMEs were at 4.3 percent in 2015. It should be noted that manufacturing SMEs showed a higher growth in 2007 at 7.2 percent while trade and maintenance SMEs were at 7 percent. It can be seen that trade and maintenance SMEs showed better improvement in 2015.



	2007	2008	2009	2010	2011	2012	2013	2014	2015
Manufacturing	7.2	2.4	-3.3	11.4	-4.8	6.9	1.7	-0.2	0.9
Trade and Maintenance	7	1.6	-2.6	9.1	0.3	5.5	0.8	-0.5	4.3
Service	3.2	1.5	-3.1	7.1	6.4	11.1	5.7	1.8	6.9

Figure 1.6 SME GDP Growth Rate Classified by Economic Activities Year 2007-2015 (Percentage)

Source: Office of Small and Medium Enterprises Promotion, 2017b.

The OSMEP reported that one of the main reasons why the government has not been able to accelerate the growth of the manufacturing sector is the move out of the manufacturing base of foreign investors. Therefore, local manufacturing SMEs played a significant role in reducing the dependence on foreign investment.

Although SMEs make a significant contribution to the Thai economy, manufacturing SMEs still need to strengthen and improve their potential in order to increase their competitiveness. If manufacturing SMEs could create more jobs and larger GDP, the income distribution contribution, employment creation and resource utilization in Thailand would improve.

1.4 Research Questions

1.4.1 What are the factors that affect the performance of manufacturing SMEs?

1.4.2 Why do these factors influence the performance of manufacturing SMEs?

1.4.3 What kind of government support could help manufacturing SMEs achieve quality growth?

1.5 Research Objectives

The main research objective of the present study is to identify the factors that affect manufacturing SMEs. Additionally, the reasons why these factors influence the performance of manufacturing SMEs will be explored. The researcher expected that the findings could yield both private and public benefits because of improvement regarding firm income, personal income, job creation, and GDP contribution.

1.6 Benefits of the Study

1.6.1 To improve the body of knowledge and to a gain better understanding of the factors affecting the performance of manufacturing SMEs in Thailand using organizational theory: the resource-based view and population ecology theory

1.6.2 To provide recommendations for responsible agencies to improve the performance of manufacturing SMEs in Thailand

1.7 Scope of the Research

For the reasons discussed above, SMEs are a very important sector of Thailand's economy because they represent around 99 percent of all enterprises, employ around 80 percent of all workers, and contribute around 40 percent to the total GDP. However, the development of SMEs in the manufacturing sector has been very slow compared to the service sector because of certain obstacles. Therefore, a thorough analysis of the manufacturing SMEs in Thailand should explore and examine the factors affecting manufacturing SMEs.

This study will focus on manufacturing SMEs in Thailand, using mix-method research approach. The research paper will have two phases: the quantitative phase to identify the factors affecting SME performance, and the qualitative phase to confirm and explain the reasons why each factor influences the performance of manufacturing SMEs.

In this study, the research will employ both quantitative method and qualitative methods. The method used in the quantitative phase is multiple linear

regression, using secondary data from the OSMEP. The method used in the qualitative phase is in-depth interviews, using data from interviewees. The participants include entrepreneurs and employees at the managerial level of manufacturing SMEs.

The dissertation will proceed as follows. Chapter two is a literature review of manufacturing SMEs in Thailand, including economic indicators and policy implications, and empirical and theoretical theories related to the determinants affecting SME performance. At the end of the chapter, conceptual recommendations for the framework for related agencies and hypotheses will be presented. Chapter three will present the methodology used in this study. Chapter four provides the analysis and results. The final chapter presents the conclusion, discussion, and recommendations.

CHAPTER 2

LITERATURE REVIEW

This chapter presents the definition of SMEs, the characteristics of SMEs in the manufacturing sector, the SME policy landscape in Thailand, the definition of performance, factor reviews, and the conceptual framework and hypotheses.

2.1 Definitions of SMEs

The definitions and concepts of SMEs vary, and there is no common agreement about the definition of SMEs worldwide as to what the exact criteria for the small enterprise (SE) and medium enterprise (ME) are. However, the general definition is mostly classified according to the number of employees. Moreover, some countries use a measure, such as initial investment, including or excluding land and buildings, annual sales, turnover or production capacity, as shown on Table 2.1.

Table 2.1 Main Element of SME Definitions in ASEAN Member Countries

Country/Economy	Employee [1)]	Capital	Fixed assets	Sales	Production capacity
Brunei Darussalam	99	-	-	-	-
Indonesia	100	-	+[2)]	+	-
Malaysia	150	-	-	+	-
The Philippines	199	-	-	+	-
Singapore	199	-	+	-	-
Thailand	200	+	+	-	-
Vietnam	200	+	-	-	-
Myanmar	<200[4)]	+	-	-	+[3)]
Cambodia	<200	-	-	-	-
Lao PDR	99	-	+	-	-

Note: 1) Figures indicate the maximum number of employees in a firm defined as an MSME; 2) "+" as an element of the definition value; 4) depends on sector.

Source: Tambunan, 2008.

Moreover, there are not only small and medium enterprises. Some countries also use the acronym “MIE” or microenterprise to explain an enterprise that employs fewer than five full-time employees. Generally, most MIEs are non-employing or self-employing. Although they do not create jobs as much as larger firms, they create income for owners and contribute to the GDP. In the future, the MIE will have a greater proportion in some countries. In ASEAN countries, it could be say that the differences among the MIE, SE and ME are stated in terms of employees, annual sales/turnover, and fixed assets.

Table 2.2 Full Definition of the SME in ASEAN Member Countries

Member Country	Employee	Annual Sales / turnover	Fixed Assets	Invested Capital
Brunei Darussalam				
MIE	0-5			
SE	6-15			
ME	51-100			
Indonesia				
a) MIE - manufacturing, trade & service	0-4			
SE - manufacturing, trade & service	5-19			
ME - manufacturing, trade & service	20-99	US$5m.	US$1m.	
b) SE - manufacturing, trade & service		<Us$100,000	<US$200,000[3]	
ME - manufacturing, trade & service	100	US$100,000-U$5m.	US$200,000-US$1m.	
Malaysia				
MIE - manufacturing	<5	<RM250,000		
SE - manufacturing	5-50	RM250,000 - <RM 10 m.		

Table 2.2 (Continued)

Member Country	Employee	Annual Sales / turnover	Fixed Assets	Invested Capital
The Philippines				
MIE - manufacturing	< 9		< 3m.	
SE - manufacturing	10-99		above P3m. - P15 m.	
ME - manufacturing	100-199		above P15m. -P100 m.	
Singapore				
SME - manufacturing			<S$15m.	
SME - services	199		<S$15m.	
Thailand				
MIE - manufacturing	<4			<500,000 bath
SE - manufacturing & services	<50		<50m. bath	<20m. bath
SE - trading (wholesaling)	<25		<50m. bath	1-9m. bath
SE - trading (retailing)	<15		<30m. bath	1-9m. bath
ME - manufacturing & services	51-200		51-200m. bath	20-100 m. bath
ME - trading (wholesaling)	26-50		50-100m. bath	1-9m. bath
ME - trading (retailing)	16-30		30-60m. bath	1-9m. bath

Table 2.2 (Continued)

Member Country	Employee	Annual Sales / turnover	Fixed Assets	Invested Capital
Vietnam				
SE	≤30			<D 1 bill.
ME	30-300			D 1 - D10 bill.
Myanmar				
SMEs	<200/100[c)]	<10m kyat[d)]		<5m kyat[c)]
MIEs	<9[b)]	<10m kyat[d)]		<5m kyat[c)]
Cambodia				
SMEs	<200[1)]			
Cambodia		**Cambodia**		
SMEs	<200[1)]	SMEs	<200[1)]	

Note: a) not including fixed assets; b) not including handicrafts; c) capital outlay; d) production value; e) depends on sector; f) industrial sector

Source: Tambunan, 2008.

Table 2.2 demonstrates that the majority of ASEAN countries classify the size of enterprises according to the number of employees. Brunei, Indonesia, Malaysia, and Thailand define the micro enterprise as a firm that has fewer than five employees, while the Philippines and Myanmar define the micro enterprise as a firm that has fewer than nine employees. The small enterprise classified by number of employees varies; for example, Brunei and Indonesia define it as the firm that has fewer employees than 15 and 19 respectively. However, Malaysia and Thailand regard the small enterprise as a firm that has fewer employees than 50. Moreover, the Philippines defines the small enterprise has having fewer than 100 employees, which is the largest number of employees compared to other countries in ASEAN.

The medium enterprise can be regarded according to three categories. The first one has fewer employees than 100, including Brunei, Indonesia, and Laos. The second group has fewer employees than 200, including the Philippines, Thailand, Singapore, and Myanmar. Only Vietnam defines the medium enterprise as having 300 employees. Therefore, it can be said that the common characteristic of SMEs is a firm with fewer than 200 employees.

In Thailand, the Thai SME promotion act formally defined SMEs as seen in Table 2.3 in 2000. The sector of SMEs has been separated into four sectors: the manufacturing sector, the service sector, the wholesale sector, and the retail sector. In the manufacturing industry, the small-size enterprise is composed of employees up to 50 or with assets of up to 50 million baht. The medium-size enterprise corresponds to an enterprise with 51 to 200 employees or with assets of no less than 50 million baht and up to 200 million baht. In the wholesale industry, the small-size enterprise is composes of employees up to 25 or with assets of up to 50 million baht. The medium-size enterprise has 26 to 200 employees or assets of no less than 50 million baht and up to 100 million baht. In the retailing industry the enterprise is composed of up to 15 employees or with assets of up to 30 million baht. The medium-size enterprise has 16 to 150 employees or assets of no less than 30 million baht and up to 60 million baht. In the service industry, the small-size enterprise has employees up to 50 or with assets of up to 50 million baht. The medium-size enterprise has from 51 to 200 employees or assets of no less than 50 million baht.

Table 2.3 Definition of SMEs in Thailand

	Number of Employees (persons)		Fixed Assets (THB millions)	
	Small	**Medium**	**Small**	**Medium**
Production sector (manufacturing, agriculture, mining)	Not over 50	51-200	Not over 50	>50-200
Service sector	Not over 50	51-200	Not over 50	>50-200
Trade sector (wholesale)	Not over 25	26-50	Not over 50	>50-100
Trade sector (retail)	Not over 15	16-30	Not over 30	>30-60

Source: Royal Thai Government Gazette (B.E. 2545, September 20) as cited in "Niyam SME [SME Definition]", n.d.

2.2 Characteristic of SMEs in the Manufacturing Sector

2.2.1 Thai Manufacturing SMEs Compared to Developed Countries

Manufacturing plays a vital role in boosting a nation's economic growth. The manufacturing sector provides large numbers of job creation, driving innovation, ensuring economic stability, and playing indispensable roles in maintaining supply chains in almost all manufacturing industries. SMEs account for over 98 percent of manufacturing establishments in most countries, governments regard small- and medium-size enterprises in the manufacturing sector as the backbone of the nation's economy. A number of national governments have created programs to enhance the competitiveness, innovation, and productivity of their SME manufacturers.

Ezell and Atkinson (2011) pointed out in the Information Technology and Innovation Foundation report that manufacturing plays a critical role in economies for five key reasons:

1) It is extremely difficult for any country to balance its trade account without a well-developed manufacturing sector.

2) Manufacturing is a key driver of overall job growth and an important source of middle-class jobs for individuals at many skill levels

3) Manufacturing is vital to a country's national security.

4) Manufacturing is the principal source of R&D and innovation activity.

5) Manufacturing and services sectors are inseparable and complementary.

Some countries, such as Canada, Japan, Spain, the United Kingdom, and the United States, have formal government agencies that provide manufacturing extension services to SME manufacturers. These manufacturing extension services (MES) aim to stimulate companies to improve their use of technology and innovation, public research institutes, and public-private partnerships. The countries which provided the support service for SME manufacturing enterprises were shown in table 2.4.

Table 2.4 Countries' Manufacturing Support

Country	Agency	Centers/Regional Offices	Total Staff	Year Founded
United States	Manufacturing Extension Partnership (MEP)	60 State and Regional Centers	1,300+	1988
Australia	Enterprise Connect	12 Centers	250	2008
Canada	Industrial Research Assistance Partnership (IRAP)	150 Offices in 90 Communities	220	1962
Germany	Steinbeis Institutes	57 Fraunhofer Institutes	18,000	1949
Germany	Steinbeis Centers	750 Steinbeis Centers	4,600	1971
Japan	Public Industrial Technology Research Institutes (Centers)	262 Offices (182 Kohsetsushi Centers)	6,000+	1902
United Kingdom	Manufacturing Advisory Service (MAS)	9 Regional Centers	150	2002

Source: Ezell and Atkinson, 2011.

According to table 2.4, it can be seen that the countries that have a healthy economy, such as Germany, paid attention to manufacturing SMEs with the early establishment of agencies and employing a number of staff members to operate the agencies. Moreover, Japan also has a policy to develop manufacturing SMEs by focusing on the promotion of innovation and technology through public industrial technology research institutes in order to foster the Japanese economy in the long term. In Thailand, although it has organizations such as the OSMEP and the SME Bank to promote SMEs, there is no specific institute for supporting manufacturing SMEs. The OSMEP's main activities are the launching of strategic plans and coordinating with related agencies to derive policy.

Table 2.5 Comparison of the Size Distributions of Manufacturing Firms in Thailand and Europe in 2007 by Size of Firm

Europe (EU27) (manufacturing)		**Thailand (manufacturing)**	
Size class	**% of Enterprises**	**% of Enterprise**	**Size class**
Micro (1-9)	80.8	94.3	Small (1-15)
Small (10-49)	14.8	3.4	Small (16-50)
Small + micro	95.6	97.7	Small (1-50)
Medium (50-249)	3.6	1.5	Medium (51-200)
Large (250 +)	0.8	0.8	Large (200+)

Source: OECD, 2011.

Table 2.5 shows the comparison of the size distributions of manufacturing firms in Thailand and Europe in 2007 according to the size of the firm. Thailand and Europe have the same proportion of large enterprises at 0.8 percent. However, Thai manufacturing has fewer medium-size firms compared to Europe. The number of Thai manufacturing firms was 1.5 percent of total number of entrepises while European medium emterprises reached 3.6 percent of total number of entrepises Compared to European manufacturing firms, 94 percent of the manufacturing enterprises in Thailand were micro enterprises and had employees between one and fifthteen while

80.8 percent of the manufacturing enterprises in Europe were micro enterprises, which had employees from one to nine. Additionally, small manufacturing in Europe was at 14.9 percent, which was greater than the number of Thai small manufacturing firms by about four times.

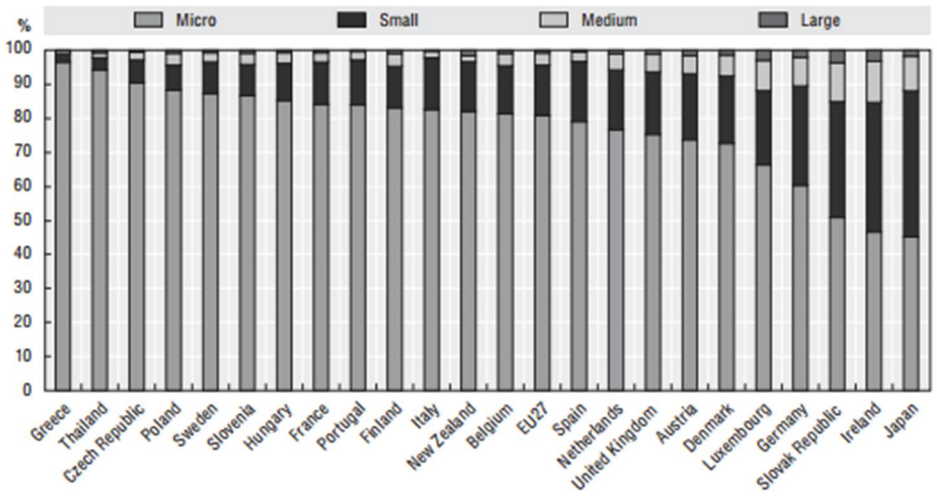


Figure 2.1 Comparison of Size Distributions of Enterprises in the Manufacturing Sector, 2007.

Source: OECD, 2011.

Moreover, Figure 2.1 shows that the proportion of small and medium enterprise manufacturing firms in Thailand tends to be low compared with other countries. Most of the enterprises in the manufacturing sector can be regarded as micro enterprises (defined as fewer than 15 employees). This proportion is lower than the OECD expected standard.

In other words, if Thai manufacturing SMEs could develop from micro enterprises to small or medium enterprises, the economic contribution and employment creation in the SME manufacturing sector would increase.

2.2.2 Value of GDP in Thailand's Manufacturing Sector

In Thailand, the manufacturing sector's GDP increased from 3,294,333 billion baht in 2011 to 3,642,867 billion baht in 2015. However, the proportion of manufacturing GDP to total GDP steadily decreased to 29.2 percent in 2011, 28.7

percent in 2012, 27.7 percent in 2013, 27.6 percent in 2014, and 26.9 percent in 2015, as shown in Table 2.6. In other words, the manufacturing sector exhibited no improvement or development regarding GDP contribution.

Table 2.6 GDP and Proportion of SME Manufacturing

	2011	**2012**	**2013**	**2014**	**2015**
Total GDP (billion baht)	11,300,485	12,349,026	12,901,498	13,132,234	13,533,596
Manufacturing GDP (billion baht)	3,294,333	3,473,818	3,571,876	3,620,623	3,642,867
Proportion of Manufacturing GDP to Total GDP (percentage)	29.2	28.7	27.7	27.6	26.9
SMEs Manufacturing GDP (billion baht)	1,110,190.22	1,170,676.67	1,203,722.21	1,220,149.95	1,227,646.18
Proportion of SMEs Manufacturing to total Manufacturing GDP (percentage)	33.7	33.7	33.7	33.7	33.7
Small Enterprise	13.7	13.7	13.7	13.7	13.7
Medium Eenterprise	20.0	20.0	20.0	20.0	20.0
Large Enterprise and Others	66.3	66.3	66.3	66.3	66.3

Source: Office of Small and Medium Enterprises Promotion, 2017b.

During 2012-2015, the value of manufacturing SMEs accounted for 33.7 percent of total manufacturing GDP's value. The total amount of manufacturing SMEs was 1,319,083 million baht in 2013, 1,226,231 million baht in 2014, and 1,225,919 million baht in 2015. It can be seen that the total amount has slightly decreased every year although the proportion has been stable. In other words, manufacturing SMEs did not improve in terms of value contribution.

In Thailand, the manufacturing sector separated into 22 industries. The data on economic activities are classified as recommended by the United Nations in order to

classify the data on economic activities. The classification the data for the manufacturing sector in Thailand was adapted from the third revision of the International Standard Industrial Classification of all Economic Activities (ISIC). The first classification was approved in 1958 followed by four revisions: the second ISIC revision was approved in 1958; the second ISIC revision was approved in 1968; the third ISIC revision was approved in 1989; the fourth point one ISIC revision was approved in 2002; and the fifth ISIC revision was approved in 2008. The OSMEP data were based on the third ISIC revision. The third revision, level one, includes 17 sections identified by the letters A to Q. Level two covers 62 divisions identified by two-digit numerical codes and level three is defined by 161 groups identified by three-digit numerical codes.

The following list below shows the first two levels of the third revision.

15 - Manufacture of food products and beverages

16 - Manufacture of tobacco products

17 - Manufacture of textiles

18 - Manufacture of wearing apparel; dressing and dyeing of fur products, printing and publishing, and tanning and dressing of leather

19 - Manufacture of luggage, handbags, saddlery, harnesses and footwear

20 - Manufacture of wood and wood products and cork, except furniture; manufacture of articles of straw and plaiting materials

21 - Manufacture of paper products

22 - Manufacture of publishing and printing materials, and the reproduction of recorded media

23 - Manufacture of coke, refined petroleum products, and nuclear fuel

24 - Manufacture of chemical products

25 - Manufacture of rubber and plastics products

26 - Manufacture of other non-metallic mineral products

27 - Manufacture of basic metals

28 - Manufacture of fabricated metal products, except machinery and equipment

29 - Manufacture of machinery and equipment

30 - Manufacture of office, accounting, and computing machinery

31 - Manufacture of electrical machinery and apparatus

32 - Manufacture of radio, television, and communication equipment and apparatus

33 - Manufacture of medical, precision, and optical instruments, watches, and clocks

34 - Manufacture of motor vehicles, trailers, and semi-trailers

35 - Manufacture of other transport equipment

36 - Manufacture of furniture, and manufacturing

Table 2.7 shows that the GDP contribution among the SME industries, which accounted for a large share, has slightly decreased. The largest share per industry is publishing, printing. and the reproduction of recorded media (ISIC 22). The SMEs in this industry accounted for 79.7 percent at 25,563.5 million baht in 2013 and decreased to 23,770 million baht in 2014 and 23,758 million baht in 2015.

Additionally, the manufacture of wood and wood products and cork, except for furniture, and the manufacture of articles of straw and plaiting materials (ISIC 20) accounted for 71 percent at 12,376.1 million baht in 2013, 11,508 million baht in 2014, and 11,502 million baht in 2015. Chemicals and chemical products (ISIC 24) accounted for 65.6 percent at 162,089.8 million baht in 2013, 150,717 million baht in 2014, and 150,642 in 2015.

Moreover, the industries which contributed the most value, such as the manufacture of food products and beverages (ISIC 15) and the manufacture of furniture (ISIC36), showed a downward trend. The manufacture of food products and beverages was valued at 224,478.6 million baht, 208,728 million baht, and 208,624 million baht in 2013, 2014, and 2015 respectively. The manufacture of furniture was valued at 171,373.4 million baht in 2013, 159,349 million baht in 2014, and 159,270 million baht in 2015. It was not only stable in proportion but the value also decreased.

Furthermore, the smallest share and value per industry such as tobacco products (ISIC 16), motor vehicles, trailers, and semi-trailers (ISIC34), the manufacture of office, accounting, and computing machinery (ISIC 30), and the manufacture of medical, precision, and optical instruments, watches, and clocks (ISIC33) have declined in value since 2014. Tobacco products (ISIC 16) accounted for 1 percent at 703.4 million baht in 2013 and 654 million baht in 2014 and 2015.

Motor vehicles, trailers, and semi-trailers (ISIC34) accounted for 2.7 percent at 11,062.27 million baht in 2013, 10,286 million baht in 2014, and 10,281 million baht in 2015. The manufacture of office, accounting, and computing machinery (ISIC 30) accounted for 5.8 percent at 11,655.2 million baht in 2013, 10,837 million baht in 2014, and 10,832 million baht in 2015. The manufacture of medical, precision, and optical instruments, watches, and clocks (ISIC33) was valued at 8,294.3 million baht in 2013, 7,712 million baht in 2014, and 7,708 million baht in 2015.

In Thailand, SME manufacturers still have not been able to perform better. Although the share per industry was stable, the value continued to decrease. Moreover, a productivity gap between large and small manufacturers obviously existed. Therefore, it is important for manufacturing SMEs to build the capacity to be able to compete in market and to contribute to a higher GDP. Identifying the factors affecting manufacturing SMEs is essential for improving SME enterprises and for developing environmental factors.

Table 2.7 Value of Manufacturing Sector in 2013-2015

ISIC	Industry	SME Value 2013			SME Value 2014			SME Value 2015		
		Value (Million Baht)	Percentage per industry	Percentage for total	Value (Million Baht)	Percentage per industry	Percentage for total	Value (Million Baht)	Percentage per industry	Percentage for total
ISIC 15	Manufacture of food products and beverages	224,478.6	33.2	17.0	208,728	33.2	17.0	208,624	33.2	17.0
ISIC16	Manufacture of tobacco products	703.4	1.0	0.1	654	1.0	0.1	654	1.0	0.1
ISIC17	Manufacture of textiles	66,552.4	31.3	5.0	61,883	31.3	5.0	61,852	31.3	5.0
ISIC18	Manufacture of wearing apparel; dressing and dyeing of fur	103,875.4	34.6	7.9	96,587	34.6	7.9	96,539	34.6	7.9
ISIC19	Manufacture of luggage, handbags, saddlery, harnesses and footwear	59,222.4	47.7	4.5	55,067	47.7	4.5	55,040	47.7	4.5
ISIC20	Manufacture of wood and wood products and cork, except furniture Manufacture of articles of straw and plaiting materials	12,376.1	71.0	0.9	11,508	71.0	0.9	11,502	71.0	0.9
ISIC21	Manufacture of paper and paper products	16,507.7	23.5	1.3	15,349	23.5	1.3	15,342	23.5	1.3
ISIC22	Publishing, printing and reproduction of recorded media	25,563.5	79.9	1.9	23,770	79.9	1.9	23,758	79.9	1.9
ISIC23	Manufacture of coke, refined petroleum products and nuclear fuel	71,760.4	43.1	5.4	66,725	43.	5.4	66,692	43.1	5.4

Table 2.7 (Continued)

ISIC	Industry	SME Value 2013			SME Value 2014			SME Value 2015		
		Value (Million Baht)	Percentage per industry	Percentage for total	Value (Million Baht)	Percentage per industry	Percentage for total	Value (Million Baht)	Percentage per industry	Percentage for total
ISIC24	Manufacture of chemicals and chemical products	162,089.8	65.6	12.3	150,717	65.6	12.3	150,642	65.6	12.3
ISIC25	Manufacture of rubber and plastic products	73,367.7	44.3	5.6	68,220	44.3	5.6	68,186	44.3	5.6
ISIC26	Manufacture of other non-metallic mineral products	47,349.7	27.3	3.6	44,02	27.3	3.6	44,006	27.3	3.6
ISIC27	Manufacture of basic metals	28,686.2	59.6	2.2	26,673	59.6	2.2	26,660	59.6	2.2
ISIC28	Manufacture of fabricated metal products, except machinery and equipment	52,278.1	44.7	4.0	48,610	44.7	4.0	48,586	44.7	4.0
ISIC29	Manufacture of machinery and equipment	82,106.4	45.6	6.2	76,346	45.6	6.2	76,307	45.6	6.2
ISIC30	Manufacture of office, accounting, and computing machinery	11,655.2	5.8	0.9	10,837	5.8	0.9	10,832	5.8	0.9
ISIC31	Manufacture of electrical machinery and apparatus	37,436.5	56.1	2.8	34,810	56.1	2.8	34,792	56.1	2.8
ISIC32	Manufacture of radio, television and communication equipment and apparatus	27,811.5	11.3	2.1	25,860	11.3	2.1	25,847	11.3	2.1

Table 2.7 (Continued)

ISIC	Industry	SME Value 2013			SME Value 2014			SME Value 2015		
		Value (Million Baht)	Percentage per industry	Percentage for total	Value (Million Baht)	Percentage per industry	Percentage for total	Value (Million Baht)	Percentage per industry	Percentage for total
ISIC33	Manufacture of medical, precision, and optical instruments, watches, and clocks	8,294.3	19.7	0.6	7,712	19.7	0.6	7,708	19.7	0.6
ISIC34	Manufacture of motor vehicles, trailers, and semi-trailers	11,062.6	2.7	0.8	10,286	2.7	0.8	10,281	2.7	0.8
ISIC35	Manufacture of other transport equipment	24,531.6	40.5	1.9	22,810	40.5	1.9	22,799	40.5	1.9
ISIC36	Manufacture of furniture, manufacturing n.e.c.	171,373.4	57.2	13.0	159,349	57.2	13.0	159,270	57.2	13.0
	Total	1,319,083	33.7	100.0	1,226,531	33.7	100.0	1,225,919	33.7	100.0

Source: Office of Small and Medium Enterprises Promotion, 2015, 2016, 2017b.

2.3 Thailand's SME Policy Landscape

SME development is important for the national and regional economy. However, most reports have claimed that the SMEs in ASEAN countries still face difficulties in terms of financing access, technology, and competitiveness. Therefore, an appropriate SME policy framework is important for increasing SME competitiveness.

In ASEAN, SMEs share about 92 to 99 percent of all enterprises, employ more than 70 percent of total employment in Cambodia, Indonesia, Laos and Thailand, and about 58 to 68 percent in Brunei, Malaysia, the Philippines, Singapore, and Vietnam. It can be seen that the SMEs' share of the establishment of total enterprises and share of employment are recognized as an important part of the economy. However, it can be seen in figure 2.2 that ASEAN SMEs contribute only from 22 to 37 to the GDP.

In Thailand, although the share of employment in the SME sector accounts for more than 70 percent of total jobs, the share of the GDP has been lower than in Indonesia, Singapore, and Vietnam. Additionally, Thai SMEs' share of employment has been higher than in Malaysia and the Philippines, but the share of the GDP has been slightly different from these two countries. Therefore, the improvement of the GDP contribution of Thai SMEs should be considered as an important issue.

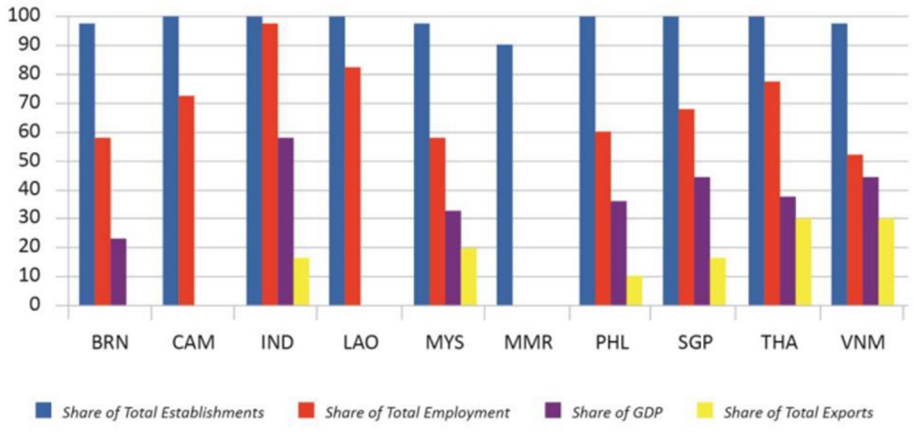


Figure 2.2 Relative Economic Importance of SMEs in ASEAN (in various years and percentages)

Source: "Beyond AEC 2015: Policy Recommendations for ASEAN SME Competitiveness", 2014.

The ASEAN SME Agencies Working Group (SMEWG) created the ASEAN SME Policy Index in order to analyze policy development and implementation and to identify the gap in policy elaboration and implementation at the regional and national level. The SME Policy Index. derived from the OECD and adapted to ASEAN context, is composed of five main pillars: human resource development, capacity building, enhancement of SME marketing capabilities, access to financing, and access to technology. Moreover, the SMEWG has suggested that ASEAN countries should improve the creation of a conductive policy environment.

The results of the Policy Index shown in Figure 2.3 indicate that compared to other ASEAN countries, Thailand is regarded as a more developed member. However, the Policy Index indicates that Thailand still has a lower Policy Index than Singapore or Malaysia. Although Thailand's aggregated index score is at the same level with Indonesia, the share of the GDP of Thailand's SMEs is still lower than that in Indonesia.

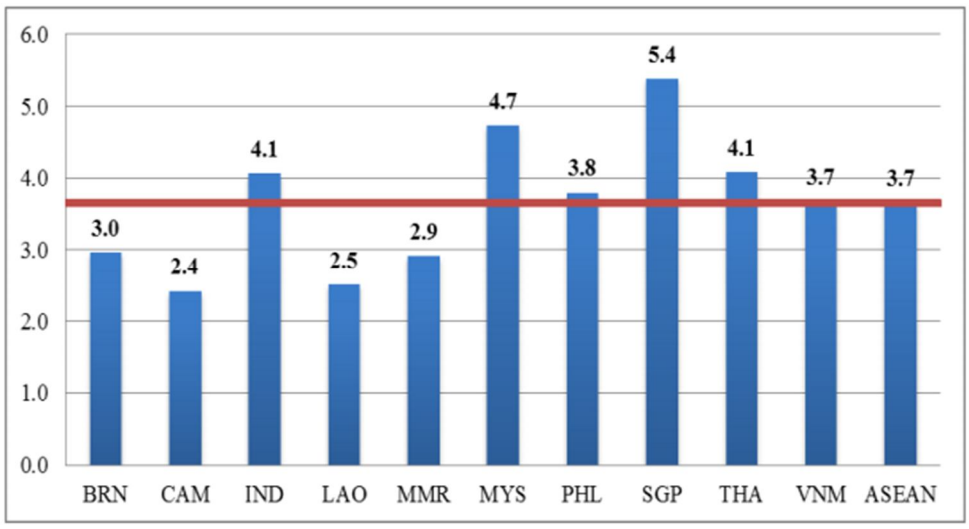


Figure 2.3 ASEAN SME Policy Index by Country

Source: Kimura et al., 2014

2.3.1 Strategic Policy Agenda

In Thailand, the government was not focused on SMEs until the late 1990s—the financial crisis in 1997 was the impact factor that stimulated the government to turn its attention to SMEs. Therefore, the first SME basic law called the "SME promotion Act" was launched in 2000 to establish the SME Promotion Committee, the Office of SMEs Promotion of Thailand (OSMEP), the Executive Board, the SME Promotion Fund and the SME Promotion Plan. Nagai (2008) reported that the SME Promotion Committee appointed the Prime Minister as the chairperson together with representatives from the government, representatives from the Federation of Thai Industries (FTI), six academic experts, and six representatives from private organizations. The main tasks of the SME Promotion Committee are to propose SME promotion plans and policies. The Executive Board appointed the Vice Ministry of Industry as the chair person and appointed representatives from such government organizations as the Ministry of Finance, the Ministry of Agriculture, and the Board of Investment (BOI) and academic experts from non-government organizations. The Executive Board has the authority to decide policy about the management of the OSMEP, to approve action plans, and financial and budget plans and fund management. Therefore, the OSMEP was set by the SME Promotion Act in 2000 under the supervision of the SME Promotion Committee and the Executive Board. In 2017, the OSMEP also set four missions as listed below.

1) Formulating the SME Promotion Master Plan and SME Promotion Action Plan and producing policy recommendations for the improvement of laws and regulations concerned with SMEs

2) Propelling, supporting, and developing the SME promotion systems and integrating the SME promotion work of all public and private agencies, domestically and internationally, to ensure their accomplishment in line with the SME Promotion Master Plan and the SME Promotion Action Plan

3) Developing SME knowledge and a database to support SME policy recommendations and SME promotion work

4) Administering the SME Promotion Fund so as to be a tool for effective SME promotion

In other words, the OSMEP has the duty to formulate the SME Promotion Master Plan and SME Promotion Action Plan. However, the usage of the SME Promotion Fund, for example, borrowing, lending, investing, and providing support, should be approved by the SME Promotion Committee chaired by the Prime Minister.

The first SME Promotion Plan 2002-2006 was initiated in 2002 when Thailand's economy had just begun to recover from the economic crisis in 1997. The main purpose was to promote SMEs to be one of the drivers of the country's economy. Therefore, the strategies focused on supporting SMEs to be a key economic and social mechanism by improving infrastructure and reducing obstacles in business operation. Moreover, the strategy was an attempt to increase the number of new entrepreneurs. The first, second, and third SME Promotion Master Plan are shown in Table 2.8.

Table 2.8 Strategies Under the First, Second, and Third SME Promotion Master Plan

	1st SME Promotion Master Plan (2002-2006)	**2nd SME Promotion Master Plan (2007-2011)**	**3rd SME Promotion Master Plan (2012-2016)**
1)	Reinvigorating SMEs as a key economic and social mechanism	Creating and developing SMEs and entrepreneurs.	Supporting environmental factors conducive to SME business operations
2)	Building and improving infrastructure and reducing obstacles in business operations	Upgrading productivity and innovation in manufacturing sector SMEs	Enhancing competitiveness for SMEs
3)	Supporting SMEs to Attain Sustainable Growth	Enhancing efficiency of SMEs in the trade sector (retail and wholesale).	Promoting SMEs to balancing develop with region potential
4)	Capacity Building of SMEs in the Export Sector	Promoting value creation and value added in the service sector	Capacity Building for SMEs to be compatible with international schemes

Table 2.8 (Continued)

	1st SME Promotion Master Plan (2002-2006)	2nd SME Promotion Master Plan (2007-2011)	3rd SME Promotion Master Plan (2012-2016)
5)	Creating and Developing New Entrepreneurs	Promoting SME development in the region and local areas.	
6)	Promoting the Role of Community Enterprises	Developing enabling factors conducive to SME business operations.	

Source: 1st, 2nd, and 3rd SME Promotion Master Plan

The OSMEP found problems and obstacles with SMEs from the first SME Master Plan (2002-2006) in six areas: finance, market, infrastructure, enterprises, human resource, creating new enterprises and promoting the role of community enterprises.

Finance: the majority of SMEs could not access sources of funds because they lacked collateral. Moreover, the regulations and procedures of financial institutes were obstacles for SMEs to receive financial support. Additionally, the registration in the Market for Alternative Investment (MAI) requires a numerous qualifications.

Market: the majority of SMEs lacked knowledge, understanding, and skills concerning the domestic and international market. They were not able to create innovation, brands, or images to be unique. Therefore, fifty-one percent of the exports of SMEs were primary products such as rice and rubber.

Infrastructure: although the OSMEP established a testing laboratory for agriculture products and food in the regional area, there were few laboratories for other sectors. Moreover, the research and development centers were not sufficient compared to demands. Additionally, trade laws and regulations only slowly improved.

Enterprise: the majority of SMEs have low skill in the application of information technology. Moreover, most entrepreneurs have low managerial capability.

Human resources: the entrepreneurs lacked awareness, knowledge, and understanding of professional business. They required the support of consultants and analysts from the government to raise the level of knowledge and skill.

Creating new entrepreneurs: the results met the target but the reports revealed that they lacked awareness and understanding of professional business.

The second SME Master Plan (2007-2011) framework focused on potential development for SMEs to be balanced with social and environmental responsibility, sustainable growth, and to increase competitive advantage. In response to the second SME Master Plan, there were a lot of activities from both the private and public sector to promote SMEs, for example, the establishment of the SME Corner and SME database to provide knowledge for business operations, facilitating product exhibitions, facilitating business matching, providing machine funds for improving SME factories, providing capacity building funds, providing internationalization funds, providing intellectual property funds, and developing business consolatory center for SMEs.

However, the results of the second SME Master Plan (2007-2011) did not meet the target. The proportion of the contribution of SME GDP to the total GDP gradually decreased from 38.10 in 2008 to 37.10 in 2010. Moreover, the export growth rate of SMEs was less than the total export growth rate. Lastly, the Total Factor Productivity (TFP) of SMEs did not meet the target, which should expand by more than three percent per year. The OSMEP reported that this limitation was the result of a lack of integration among central, regional, and community agents, and a lack of funds to develop knowledge, expertise, and understanding of SME requirements.

The Third SME Master Plan (2012-2016) framework still emphasized a sufficient economy, and human resource-oriented development and balancing development. The plan aimed to promote the building capacity of SMEs to be mainly economically driven by supporting knowledge, creativity, innovation, and culture identity. Moreover, the strengthening of SME networks was also regarded as a target to achieve.

In 2015, the SME GDP was 5,559,534 billion baht and accounted for 41.1 percent of the total GDP. It can be seen that from 2009 to 2014 the proportion of the SME GDP to the total GDP was lower than 40 percent. The SME GDP growth rate

accounted for 5.3 percent while the total GDP growth rate was 2.8 percent. However, the proportion of the manufacturing SME GDP steadily decreased from 26.4 percent in 2010 to 22.1 percent in 2015. The SME GDP expansion mostly depended on the service sector. Therefore, the development of manufacturing SMEs to be able to generate greater GDP was important for expanding the national GDP.

2.4 What is the Performance Indicator for SMEs?

The performance of SMEs has been debated as to what the appropriate definitions are. There are a variety of perspectives concerning the development of a conceptual framework for SME performance measurement. Marri, Gunasekaran, Grieve (2000) defined performance measurement as important, as it is established to monitor, guide, and improve business functions. Neely, Gregory, & Platts (1995) defined performance measurement as the set of metrics used to quantify efficiency and effective action. Effectiveness can be defined in terms of the level of customer satisfaction while efficiency focuses on how to utilize firm resources to achieve economical goals.

Murphy, Trailer, and Hill (1996) stated that "accurate performance measurement is critical to understanding new venture and small business success and failure." This paper provides an analysis of 51 articles and found that efficiency, growth, and profit were most frequently used. Taticchi et al. (2008a, 2008b) found that the paper related to SME Performance Measurement appeared after the 1990s. Most SMEs use financial performance measurements as large companies do, such as return on equity (ROE) and return on assets (ROA) and return on capital employed (ROCE). At the beginning of the 2000s, the research on SME performance measurement divided into two directions. One was the application/adaptation of the models developed for large companies, for example the balanced scorecard, and another one was the development of specific models for SMEs that seemed to have an integrated framework.

Table 2.9 List of Models/Frameworks and Performances of SMEs

Period of Introduction	Name of the Model/Framework	References
1995	Model for quality-based performance	Noci (1995)
1997	BSC application to SMEs	Chow et al. (1997)
1998	Customer orientation and performance	Kwaku and Satyendra (19998)
1999	Activity-based costing in SMEs	Gunasekaran et al. (1999)
2000	Quality model in an SME context	McAdam (2000)
2000	Computer-based performance measurement in SMEs	Kuneg et al. (2000)
2000	OPM® : a system for organizational performance measurement	Chennell et al. (2000)
2000	Performance measurement in the implantation of CIM in SMEs	Marri et al. (2000)
2000	Performance measurement based on SME owner's objectives	Watson et al. (2000)
2001	Effective performance measurement of SMEs	Hudson, Lean and Smart (2001)
2001	Indicators for performance measurement of SMEs	Hvolby and Thorstenson (2001)
2001	Theory and practice of SME performance measurement systems	Hudson, Smart, and Bourne (2001)
2002	Dynamic integrated performance measurement system	Laitinen (2002)
2004	A strategic planning model for SMEs based on the BSC	Davig et al. (2004)
2005	Practice of performance measurements	Sharma et al. (2005)
2007	BSC implemented in a not-for-profit SME	Manville (2007)
2007	A BPI framework and PAM for SMEs	Khan et al. (2007)
2008	A performance measurement model based on the grounded theory approach	Chong (2008)

Source: Taticchi et al., 2010.

According to Table 2.9, it can be seen that there are a variety of models and frameworks. For example, Noci (1995) and McAdam (2000) focused on quality, and Chow et al. (1997), Davig et al. (2004), and Manville (2007) adopted the balanced scorecard to apply to SMEs. Most authors considered that performance measurement is important for SMEs. Therefore, it is important to evaluate the performance of SMEs and to determine their indicators. If the performance is not good, the SME should know the factors affecting its performance in order to improve.

Normally, the firm performance of SMEs was mostly measured according to financial performance. Some of the financial performance measures are revenue, income, sales growth rate, cash flow, return on shareholder equity, gross profit margin, net profit from operations, profit to sales ratio, and return on investment. Regarding the SME literature, Table 2.10 shows the most important performance measurement frameworks for SMEs. It can be seen that financial measurement is an important indicator in a majority of papers.

Table 2.10 Titles/Model of Key Performance Indicator in SMEs

Author	Financial Indicator	Non-Financial Indicator
Hudson et al., 2001 (Theory and practice in SME performance measurement systems)	• orders/receipts • profit • costs • cash flow • sales/value added • income • expenditure	• defects scrap • output lead times • delivery time • user problems • product usage • staff turnover • product competitiveness
Laitinen 2002 (Integrated performance measurement for small firms)	• income • costs	

Table 2.10 (Continued)

Author	Financial Indicator	Non-Financial Indicator
Davig et al., 2004 (adaptation of balanced scorecard by SMEs)	• cash flow • sales growth • profit unit cost	• time to develop next generation • time spent on research • cycle time • warranty returns • degree of customer satisfaction • new customer enquiries • customers' satisfaction • referral rates
Chong, 2008 (Measuring performance of SMEs)	• profits before tax • profits per employee • revenue growth	
Chalmeta, R. et al., 2012 (Methodology to develop a performance measurement system for small- and medium-sized enterprises)	• revenue growth • profitability • cash Flow • return on Investment • growth quota per segment	• degree of satisfaction • growth quota per segment • customer retention, • Percentage of growth in number of customer • cycle Time • quality of the production process • quality of product design

Table 2.10 (Continued)

Author	Financial Indicator	Non-Financial Indicator
		• time to reply to customers, • effectiveness • efficiency • investment in new technology • percentage of automated processes • percentage of new hire retention after certain period • employee productivity • number of advanced training courses • measures for the preservation of the environment, for example, % of materials used that are recycled input materials

Table 2.10 shows that the financial indicators are widely used as performance measurements for SMEs. The financial indicators include income, profit, sales, cost, and cash flow. Hudson, M., Smart, A., & Bourne, M. (2001) and Laitinen (2002) regarded income as a significant indicator. Davig et al. (2004), Chong (2008), and Chalmeta et al. (2012) focused on both revenue growth and profit. Although the perspectives are different, revenue and profits are considered the important performance indicators. The non-financial indicators are comprised of human resources, customer satisfaction, and time, but they are not commonly applied in the various models as revenue and profit. In Thailand, most SMEs measure their performances growth by sales value and revenue. Moreover, most statistical data also record revenue as firm indicators. Therefore, this research paper will use revenue or annual income as the performance indicators.

2.5 Factors Influencing SME Performance

In order to improve the performance of manufacturing SMEs, it is essential to understand what factor affects manufacturing SMEs' performance and why. In this research, organizational theory: population ecology and resource-based view are focused on to examine the linkage between the determinants and organizational performance. Nowadays, the dynamic of the global economy and the instability of the political situation are difficult to predict, and thus it is important for SMEs to understand the factors that will help them be able to compete in the market and increase their performance for example in terms of revenue and profit.

2.5.1 Organizational Theory: Population Ecology

The concept of population ecology proposed that the growth of the firm's age and size leads to a structured, formalized, and routinized organization because a mature organization collects experiences and adjusts its routine activities to survive in the market (Blau & Schoenherr, 1971). Therefore, the factors such as size and age are regarded as significant factors of a firm's performance. Firms that survive have an ability to learn from the environment and to change their structure to be more effective. One of the important assumptions of population ecology is structural inertia, which suggests that inertia forces will not allow firms to create ineffective routines. The environment favors the selection of organizations that have a high level of inertia and adaptation (Hannan & Freeman, 1984).

2.5.1.1 Age

Population ecology also proposed that the ability of reproducibility increases with age because of internal learning, coordination, and more routine activities (Singh & Lumsden, 1990). Therefore, the liability of newness can cause higher failure rates for new firms (Stinchcombe, 1965).

Some scholars found that firm age also reflects the strength to survive market competition. The more mature companies have more competencies to execute routine business activities (Fichman & Kemerer, 1993; Kalyanaram & Wittink, 1994). The resource-based view predicts that older firms will have considerable more resources than younger firms because firms acquire resources over time (Autio et al.,

2000). Therefore, older firm have a larger stock of resources than younger firms. Especially on internationalization regime, older firms may perceive a lower risk of doing business abroad because they will be more mature in dealing with challenges (Bloodgood et al., 1996). Moreover, they seem to know the culture and gather more knowledge and experience (Andersson et al.,2004). In other words, younger firms may be handicapped by their limited resources. Stinchcombe (1965) found that the "liability of newness" prevents younger firms from gaining higher competitive advantage than older firms. Rhee (2002) supported the notion that younger firms have numerous factors that are obstacles to their operation in comparison to older firms. Young firms tend to be resource-constrained and suffer from the liability of newness (Sharfman et al., 1988) and older firms have more opportunity to experiment and select the best fit for their needs (George, 2005).

However, some studies argued that a company with a young age exhibits better performance due to its ability to absorb and utilize new technologies (Hannan & Freeman, 1984). Technology is a key challenge for firms today and the young company often can utilize technology and adapt it properly for business than an older company (Aldrich & Auster, 1986). The relationship between a firm's age and its growth rate has also been frequently questioned by the earliest scholars. One of the influences of age on growth was discussed by Jovanovich (1982), who proposed a selection model for industry evolution. Based on Jovanovic's ''learning model," this model assumes that firms learn their efficiency level through production experience and only efficient firms grow and survive. The firm's growth and performance are related to age because older firms tend to realize that they are less efficient, produce less, and are not flexible in terms of finding solutions. Additionally, Fizaine (1968) observed that age has a negative effect on the growth of establishments and that the growth rate decreases with age. Moreover, Dunne et al. (1989) found that expected growth rate and also growth variance decrease with age.

This research has adopted population ecology because it can explain the relation between firm structure and performance. Most of the findings, which concluded that younger firms have a higher growth rate, were related to developed countries, which have fewer obstacles in adopting technology and innovation. However, Thailand is not a developed country and therefore the hypothesis below is proposed.

Hypothesis 1: Older firms have a positive relationship with the revenue of manufacturing SMEs.

2.5.1.2 Size

Another related area of population ecology was research concerning the liability of smallness. Aldrich and Auster (1986) for example explained that smaller organizations struggled with fund raising, governmental regulations, and instability, while larger organizations could provide better resources. The larger firms enjoy the benefits of having a better reputation which provide financial resources, qualified managerial employees, and attract potential customers (Fackler et al., 2013). Moreover, the newer organizations have to spend more time to develop internal routines, skills, and relationships with stakeholders that already exist in older firms (Stinchcombe, 1965; Thornhill & Amit, 2003). Therefore, smaller organizations have struggled with resource limitations and difficulty in the recruiting of a talented manager. Audretsch et al. (2004) found that the barriers to the entry of firms in the manufacturing sector were more extensive than in the service sector.

However, the relation of size to performance has been widely debated by scholars because of various research findings related to firm size and performance. Oliveira and Fortunato (2006) found that small firms that are in the beginning of their life cycle have better opportunity to grow than large firms because they need to produce efficiently in order to survive. Fotopoulos and Giotopoulos (2010) discussed the results for Greek manufacturing firms, indicating that the small and young firms reach a better growth rate. Additionally, there has been some argument that size and growth have no relationship. Mansfield (1962) and Hart and Oulton (1996) agreed that size and growth are not connected.

Therefore, this research aims to find out whether size is a factor affecting the performance of manufacturing SMEs in Thailand. The hypothesis was assumed by adopting the concept of liability of smallness in population ecology theory.

Hypothesis 2: Larger firms have a positive relationship with the revenue of manufacturing SMEs.

2.5.2 Organizational Resource Theory: Resource-based View

Organizational resources are tangible and intangible assets, for example, financial resources, physical capital resources, human capital resources, and organizational capital resources, which are controlled by the organization in order to increase competitive advantage (Barney, 1991). In order to achieve superior performance, resources should be valuable, rare, inimitable, and non-substitutable (Barney, 1991). If the inimitable resources belong to the organization, the competitive advantage will be maintained in firms.

2.5.2.1 Human Capital Resources

Among numerous types of resources, human capital resources are regarded as one of the most important because they are difficult to imitate compared to other resources (Adner and Helfat, 2003; Datta et al., 2005). Thus, organizations have different performances because they have different human capital (Hitt et al., 2001). In order to enhance the capability of people, there are two ways: formal education (Explicit Knowledge) and learning-by-doing on the job (tactic Knowledge). Therefore, training is one of the tools that can improve the skills, knowledge, and experience of the employee. Swanson (2001) found that investment in training and education improves the learning capability of employees and results in better firm productivity. Human capital resources are important, but most SME owners are not concerned about training. However, some empirical evidence supports the idea that SMEs that have training resulted in better firm performance.

1) Training

Although training is important, training in SMEs is unlikely to be provided. It is well established in the small business literature that small firms are less likely to provide training (Smith, 2003). In developed countries such as the UK and Australia, it has also been noted that SMEs do not invest in training and they do not have enough capability to make reports related to training activities (Smith & Billett, 2005). Hill and Stewart (2000) found that employee training in SMEs is often described as informal, unplanned, reactive, and short-term oriented. Chi et al. (2008) found that the need for SME training is low because the majority of SMEs regard training as not important. Moreover, some entrepreneurs believe that training does not

reflect organizational performance because they feel that if SMEs have a lot of training activities it will not lead to higher firm performance.

However, Devins, and Johnson (2003) have argued that dissatisfaction with the results of training in SMEs derives from inappropriate training content. Therefore, this research explores the topic of training in order to identify the types of training content that affect firm performance. One is training in production capability, and another one is training in marketing capability.

Barringer et al. (2005), who performed a quantitative analysis of the differences between fast and slow-growth firms using case studies, found that human resource practices, including pay and training, seem to be much more important in fast-growing firms. Moreover, Lopez-Garcia and Puente (2012) have reported that fast-growing firms spending more time and resources on staff training has improved the quality of staff. Some empirical evidence supports that idea skill shortages or skill gaps represent one-third of the challenges of SMEs. This problem can cause firm failure because superior human capital too is inimitable and non-substitutable in SMEs, which are typically more labor-intensive (Way, 2002). In other words, the manufacturing SMEs that rely on the labor to produce the goods tends to has a direct influence from labor training.. Bin Atan et al. (2015) studied manufacturing SMEs in Malaysia and found that training can enhance work performance. In Thailand, most manufacturing SMEs are labor-intensive, and therefore the training in production capability of employees is important in terms of firm performance.

Hypothesis 3: Training in production capability has a positive relationship with the revenue of manufacturing SMEs.

Additionally, marketing capability has been one of the significant factors in terms of increasing the firm's competitive advantage and performance (Moorman & Rust, 1999). Marketing knowledge, skills, and resources enable the business to meet the market demands, take advantage of market opportunities, and meet competitive threats (Vorhies & Harker, 2000). The low capability of marketing of SMEs could lead to business crises (Marjanova Jovanov & Stojanovski, 2012). Brouthers et al. (2015) found that SMEs struggle with conduct market research, and the measurement of promotion efficiency and pricing because

they lack a body of knowledge. In order to acquire satisfactory income or sales value, there are two main components: promotional activities and the quality of sales people (Weerawardena, 2003b). Therefore, it is important to enhance the capability of employees in sales and marketing departments in order to gain an advantage in the market and in terms of sales revenue.

Hypothesis 4: Training in marketing capability has a positive relationship with the revenue of manufacturing SMEs.

2) Employee Retention

The retention of employees in SMEs should be examined because the ability of SMEs to recruit and train new employees is not the same as in large firms. The procedure of sourcing, hiring, replacing, and training may cause money and time. Moreover, these limitations could be obstacles for SMEs, for example, in terms of skill shortage, recruitment cost and time, productivity drops, and time consumption of training.

Mahal (2012) defined the concept of retention as keeping employees from leaving the organization. Aldamoe and Bin (2012) and James and Mathew (2012) defined retention as the firm process that mainly focuses on retaining employees for a maximum period of time.

The retention of employees has become one of the important goals of human resource management practice. Rappaport et al. (2003) for example found that the firm's competitive advantage will drop if firms cannot maintain their workforce. Additionally, a high rate of turnover could impact a variety of dimensions, such as productivity performance and financial performance (Shaw et al., 2009; Sun et al., 2007).

Gerhart and Rynes (2003) suggested that employee loyalty and employee satisfaction could enhance productivity, which would lead to firm growth. The concern about retention for SMEs is not only a lack of skilled employees, but also the opportunity for competitors to improve their workforce. Dalziel (2010) confirmed that SMEs pay attention to developing "the right skills for the right staff" in order to ensure that the knowledge and skills go to the employees that have an intention to stay with the firm. Beynon et al. (2015) expressed the idea that SME employee retention is essential because it impacts SMEs performance and SMEs' growth potential.

Hypothesis 5: Employee retention has a positive relationship with the revenue of manufacturing SMEs.

3) Managerial Capability

Managerial capability can be understood as a process of management's interaction with resources (Wensley, 1999). Therefore, managerial capability has a direct relationship with firm resources and firm performance. Managerial capability is widely known as the innate and learned ability, and expertise and knowledge of managers in organizations (Castanias & Helfat, 2001). It has been classified into three categories: general skills, industry-specific skills, and firm-specific skills. General skills are mostly used across generic business and personal interactions. Firm-specific skills are those related to corporate values in a particular company such as firm history, culture, and firm strength and weakness (Puffer and Weintrop, 1991). Industry-specific skills are special skills for each industry. Barney (1991) stated that managers are important according to the resource-based view because managers are the people that analyze the potential of the firm and sustain the competitive advantage. Zaridis (2013) explained that most SME's failures are caused by a lack of managerial skill and knowledge in managing the firm.

Furthermore, some studies have explained that the growth of SMEs depends on the owner's entrepreneurial skill, in terms of both general management and entrepreneurial competency. These skills allow the owners to understand market opportunities, to set up goals, to seek resources, to produce services and products, and to solve problems. Morris et al. (2013) explained that competency is comprised of the knowledge, skills, attitudes, values, and behaviors that are needed to complete a task successfully. Therefore, it is an important element for entrepreneurs to lead the firms to be successful. If SME owners lack managerial capability, it is difficult to lead the firms in the right direction. Additionally, Botha, Vuuren, and Kunene (2015) found that most entrepreneurial performance models consist of motivation, entrepreneurial skills, and business skills. Moreover, most entrepreneurs agree that managerial capabilities are important for them in terms of firm creation, firm performance, firm growth, and firm survival in both western and non-western contexts.

Hypothesis 6: Low managerial capability has a negative relationship with the revenue of manufacturing SMEs.

2.5.2.2 Financial Resources

Financial resources are an important for contributing to firm performance (Barney, 2002). Financial resources are regarded as cash reserves, loans, bonds, and financial instruments (Hooley et al., 1998). The various internal and external sources of funds help firms invest in organizations, such as product research, training, attracting partners, and necessary resources (Peppard et al., 2006). However, SMEs use less external financing than large firms and rely more on bank credit than large firms because they are unable to access public capital markets. Therefore, SMEs are more likely to be financially constrained than large firms. Beck et al. (2008) studied 48 countries and found that small firms are limited in terms of expanding external financing as they are more financially constrained than large firms.

The literature generally supports the notion that the performance of SMEs also depends on the potential to invest in structure and innovation. Most investment requires capital and accessibility to finance. However, SMEs rely more on bank credit than large firms. Hadlock and Pierce (2010) found that financial constraints are related to firm size. The differences between small and large firms affect the opportunity to gain capital. Moreover, Hall (2005) has shown that the capital market generally affects small firms more than large ones, which can rely on internal financing. Young firms and low-reputation firms are even more likely to be constrained by finance. Veselinova and Samonikov (2012) found that SMEs in Europe were mostly hampered by a low chance of getting grant financing.

Da Silva et al. (2007) found that the accessibility to external financing for SMEs impacts the firm's growth. The firm's profitability can be stimulated by using funds from internal or external sources, which can accelerate any business's expansion and stability (Olutunla et al., 2008). Holz-Eakin et al. (1994), Cooley and Quadrini (2001), and Cabral and Mata (2003) pointed out that the firms that receive fewer funds will grow slowly, and Kira and He (2012) found that the accessibility of finance for SMEs can positively influence the ownership and control of production factors, such as land, labor, and capital. Access to finance enables SMEs to acquire productive assets that can be used to increase their performance and growth. Olutunla

and Obamuyi (2008) pointed out that the improvement of a firm's performance leads to higher earnings, increments in sales volume, and the creation of employment and wealth maximization. However, firm performance can be limited if SMEs are not able to access debt financing to support their investment opportunities. Futhermore, Becchetti and Trovato (2002) found that finance shortage is indeed an important restraint on growth. However, Levratto et al. (2010) found that the positive relationship between financial debt and growth is not confirmed for high-growth SMEs.

Hypothesis 7: Access to financial support has a positive relationship with the revenue of manufacturing SMEs.

2.6 Further Study on the Factors Influencing SMEs

In order to confirm that the theoretical framework can be applied to real situations, the researcher further explored 10 academic papers focused on the factors influencing SMEs in developing countries, which were not technology-based production countries. Table 2.11 shows that the age of the firm's existence, the size or number of employees, employment training, employment retention/turnover, and financial support and managerial capability were the factors influencing SME performance that were of most interest by researchers. The performance mentioned in the academic papers included technical efficiency indicators, firm efficiency, profitability, sales, and revenue and the owner's opinion. However, the owner's/manager's opinions were mostly related to revenue and profitability. Moreover, the popular research tool that was applied to investigate the factors was multivariate regression analysis.

Table 2.11 SMEs Specific Factors Impacting Performance

Authors/years	Countries	Sector	Approach	Age	Size	Retention	Training	Financial Support	Managerial Capability	Performance
Mini and Rodriguez (2000)	Philippines	Manufacturing SMEs	MRA	+	+	N/A	N/A	N/A	N/A	technical efficiency indicator
Lundvall and Battese (2000)	Kenya	Manufacturing SMEs	MRA	X	+	N/A	N/A	N/A	N/A	technical efficiency indicator
Tran et al. (2008)	Vietnam	Manufacturing SMEs	MRA	X	+	N/A	N/A	+	N/A	Firm efficiency
Charoenrat et al. (2013)	Thailand	Manufacturing SMEs	MRA	-	X	N/A	+	N/A	N/A	Firm efficiency
Jahur et al.(2012)	Bangladesh	SMEs	MRA	N/A	N/A	+	+	+	+	Profitability/Leverage Liquidity
Al-Mahrouq (2010)	Jordan	SMEs	MRA	N/A	N/A	+	+	+	+	Owner/manager's opinion
Anggadwita, et al. (2014)	Indonesia	SMEs	MRA	N/A	N/A	N/A	+	N/A	+	Owner/manager's opinion
Noreen and Junaid (2015)	Pakistan	SMEs	MRA	N/A	N/A	N/A	+	N/A	+	Owner/manager's opinion
Mbugua et al..(2014)	Kenya	SMEs	MRA	N/A	N/A	N/A	N/A	+	+	Revenue/Turnover
Moothy et al (2012)	Malaysia	SMEs	MRA	N/A	N/A	N/A	+	N/A	+	Owner/manager's opinion

Note: MRA refers to multivariate regression analysis, DEA refers to data envelopment analysis "X" refers to that were found to be no significant, " - " refers to negative correlation variables , "+ " refers to positive correlation variables, and "N/A" refers to variables not included in the study Technically-efficient production refers to the existing technology that produces the maximum level of output achievable given the input usage.

According to the literature review focusing on the factors affecting SME performance in developing countries, it was found that training and managerial capability were the factors that mostly appeared in academic papers. These factors can be seen as significant.

Surprisingly, the relationship between a firm's age and a firm's performance showed varied results. There was one research that found a negative relation and there was another one where the research found a positive relation. Moreover, there were two papers that found that there was no relationship between firm age and firm performance.

Employment retention is another factor that was focused on by academic researches and two researchers agreed that it has a positive relation with SME performance. The studies in Bangladesh and Jordan found that employee retention have a positive relationship with firm performance. The performance indicator of the research in Bangladesh was profitability, leverage and liquidity while the performance indicator of the paper from Jordan was manager/owner's opinion.

Training can be regarded as one of the most important factors affecting manufacturing SMEs performance because there were six papers found that this training has a positive relationship with firm performance.

Financial support was studied by the researchers in Vietnam, Bangladesh, Jordan and Kenya and the result showed the positive relationship between financial support and firm performance. Obviously, financial support is another factor that most papers identified as having a significant positive effect on performance in less-developed countries.

Managerial capability is also interested by academic researchers. There were six papers found a positive relationship between managerial capability and firm performance. Moreover, the performance indicators which identified that managerial capability was a significance factors were manager/owner's opinions and financial indicators.

2.7 Conceptual Framework and Hypotheses

The literature review categorized the independent variables into two categories: population ecology and resource-based view. This research will focus on Population Ecology, consisting of size and age. The independent variables based on the resource-based view are composed of training, employment retention, managerial capability, and financial support. Nevertheless, training will be divided into marketing capability training and production capability training in order to identify more specific training types. Therefore, the hypotheses in this research were constructed as shown in Table 2.12. The hypotheses are set to follow the objective of this research: to examine the important factors affecting the performance of manufacturing SMEs and to investigate the reasons why they influence performance.

Table 2.12 Summary of Hypotheses on the Factors Affecting Manufacturing SMEs

Hypothesis	Reference
H1: Older firms have a positive relationship with the revenue of manufacturing SMEs.	Stinchcombe (1965) Fichman and Kemerer (1993) Kalyanaram and Wittink, (1994) Loodgood et al. (1996) Autio et al. (2000) Mini and Rodriguez (2000) Rhee (2002) Bloodgood et al. (1996) Andersson et al. (2004)
H2: Larger firms have a positive relationship with the revenue of manufacturing SMEs.	Stinchcombe. (1965) Aldrich and Auster (1986) Baum (1996) Mini and Rodriguez (2000) Lundvall and Battese (2000)

Table 2.12 (Continued)

Hypothesis	Reference
	Thornhill and Amit (2003)
	Audretsch et al. (2004)
	Tran et al. (2008)
	Fackler et al.(2013)
H3: Training in production capability has a positive relationship with the revenue of manufacturing SMEs.	Swanson (2001)
	Barringer et al. (2005)
	Lopez-Garcia and Puente (2012)
	Turcuț (2016)
	Bin Atan et al. (2015)
H4: Training on marketing capability has a positive relationship with revenue of manufacturing SMEs.	Moorman and Rust (1999)
	Vorhies and Harker (2000)
	Marjanova Jovanov and Stojanovski (2012)
	Brouthers et al. (2015)
H5: Employee retention has a positive relationship with the revenue of manufacturing SMEs.	Rappaport et al. (2003)
	Gerhart and Rynes (2003)
	Sun et al. (2007)
	Shaw et al. (2009)
	Jahur et al.(2012)
	Al Mahrouq (2010)
	Beynon et al. (2015)
H6: Low managerial capability has a negative relationship with the revenue of manufacturing SMEs.	Al-Mahrouq (2010)
	Jahur et al.(2012)
	Moothy et al. (2012)
	Zaridis (2013)
	Morris et al. (2013)
	Anggadwita et al. (2014)
	Mbugua et al. (2014)
	Noreen and Junaid (2015)

Table 2.12 (Continued)

Hypothesis	Reference
H7: Access to financial support has a positive relationship with the revenue of manufacturing SMEs.	Holz-Eakin et al. (1994) Cooley and Quadrini (2001) Barney (2002) Becchetti and Trovato (2002) and Cabral and Mata (2003) Da Silva et al. (2007) Olutunla et al. (2008) Tran et al. (2008) Al Mahrouq. (2010) Jahur et al. (2012)

The review of the literature allowed the author to formulate a conceptual framework of the factors affecting SME performance (Figure 2.1) as follows. The dependent variable of the model is revenue because it is widely mentioned in the literature and it is a common performance indicator for Thai SMEs. The independent variables consist of: firm size, firm age, production capability training, marketing capability training, employment retention, managerial capability, and access to financial support.

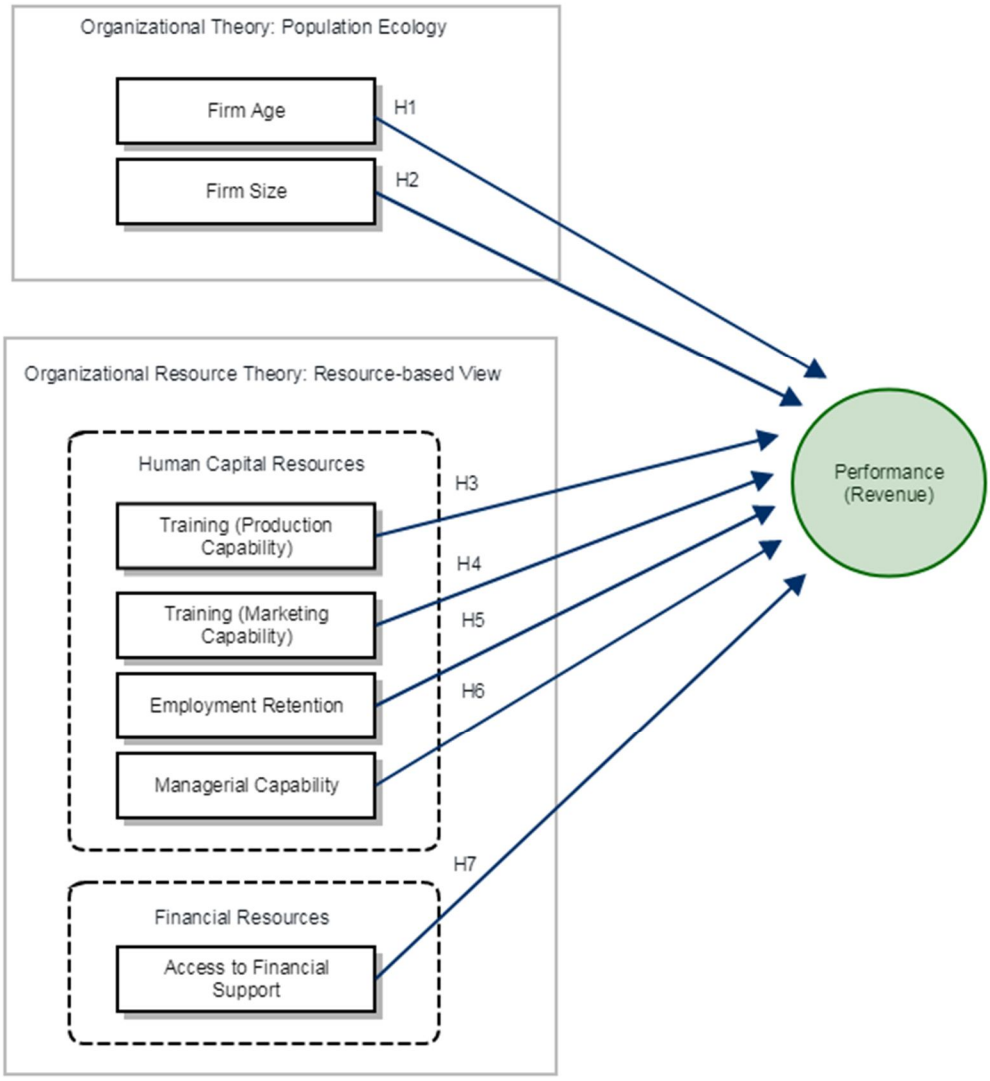


Figure 2.4 Factors Affecting Manufacturing SME Performance

CHAPTER 3

RESEARCH METHODOLOGY

This chapter explains the methodologies in this research and explains how it answers the research objectives and questions. The research used a mixed method-explanatory design. The explanatory design is a two-phase, mixed-method design where the qualitative results provide further explanation and in-depth information for the quantitative results (Cresswell, 2006). The purpose of this was to identify the factors affecting the performance of SME manufacturing in Thailand and the obstacles that they incur in order to improve their performance. The researcher aimed at identifying the factors affecting the performance of SMEs using a quantitative method and aimed to perceive in-depth knowledge of how various factors affect the manufacturing SMEs' performance and obstacles.

This chapter begins with the overall concept of the mix-method approach, followed by a brief discussion of the concept of the research design adopted in this research. Then, the chapter proceeds to the first phase of the methodology and the second methodology employed.

3.1 Research Design

In a mix-method study, the researcher collects a variety of data to provide the best understanding. The study began with broad information in order to identify the general results and then the detailed information could be collected and developed using open-ended interviews (Creswell, 2003).

The researcher selected the explanatory design, which is a two-phase, mixed-method design. The overall purpose of this design is to use qualitative method tools, such as in-depth interviews, to expand the results and to collect more details and updated information after receiving broad answers from the quantitative method.

Figure 3.1 shows that the first phase began with the quantitative method by collecting data and analysis. The second phase connects with the first phase results to explain and expand the reason why the results of first phase occurred. In this model, after the researcher identified the findings with quantitative method, she explored additional explanations such as unexpected results, outliers, and differences among groups. Then, the researcher collected information from the participants who could explain the findings.

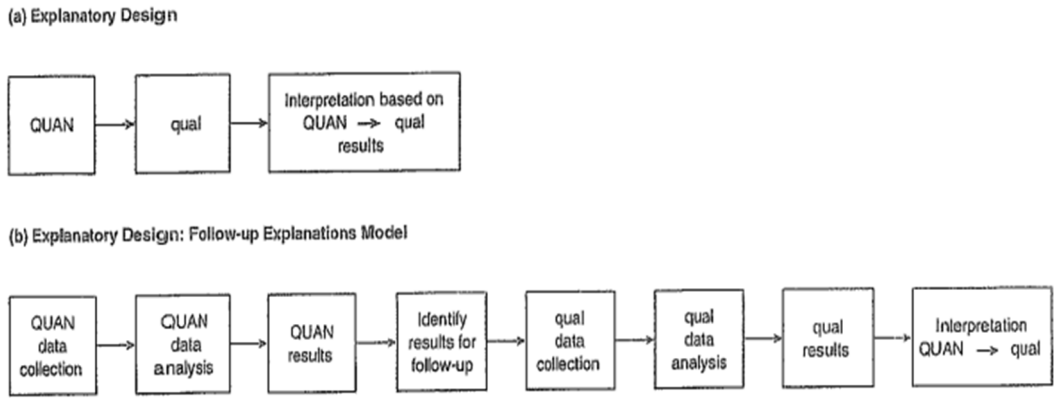


Figure 3.1 The Explanatory Design
Source: Creswell, 2006.

This research aimed to determine the factors affecting manufacturing SMEs' performance in Thailand and was separated into two phases. The first phase was the quantitative method with multiple linear regression analysis. The independent variables were selected from the literature review based on empirical and theoretical study. The second phase employed the qualitative method, where in-depth interviews with key persons were applied. This phase was applied to confirm the results from the first phase. Moreover, further argument or challenges were scrutinized within the interviews.

The benefits of using a mix-method approach are that they are compatible with the effort to combine the results from both quantitative analysis and qualitative analysis. Quantitative analysis is based on statistical data with broad information and qualitative analysis is focused on experienced participants and more up-to-date information.

3.2 First-Phase Methodology: Quantitative Method

The statistical tool used in this research was multiple linear regression analysis. Regression analysis is a model that seeks how to explain the dependent variable (Y) if the researcher knows the independent variable (X). This is the basic concept of regression analysis. Multiple regression analysis is so termed when there is more than one independent variable, such as X_1, X_2, X_3, and X_4 (Vogt, 2007). Therefore, linear regression analysis is a statistical tool for finding casual relationships. There are, according to Powintara (2014), three dimensions that linear regression analysis can analyze and explain.

1) To test the hypotheses concerning the relation of the independent variable and dependent variable in terms of significance and the relationship direction of the variables

2) To know the magnitude of the effect between the independent variable and dependent variable

3) To estimate or predict the value of the dependent variable which is affected by the dependent variable

The benefits of multiple linear regressions are that they are compatible with the effort to find relationships between the factors in and performance of manufacturing SMEs in Thailand. Moreover, it can also provide a broad picture of the level and directions of the relationships between the dependent and independent variable. The analysis procedures include the descriptive analysis of secondary data collection and the measurement model using multiple linear regression.

3.2.1 Data Collection

This research obtained the secondary data from the OSMEP database from 2008 to 2010. In order to obtain these data, the OSMEP uses a questionnaire survey of the SMEs in each province. Random sampling was applied to select the sampling group from each province and the same questions were asked in 2008, 2009, and 2010. The first collection took place in 19 provinces from 25 November 2008 to 25 March 2009. The second collection was carried out in 36 provinces from 30 June 2009 to 26 December 2009. The last collection was done in 22 provinces from 1

January 2009 to 30 December 2010. This research applied only data for the manufacturing section.

3.2.2 Unit of Analysis

The unit of analysis is province, which collected from the manufacturing SMEs in each province.

3.2.3 Population, Sample, Sources, and Collection

In Thailand, the Department of Provincial Administration divides subordinate provinces into 76 provinces. Additionally, there is one special administrative area, which is Bangkok, the capital city. The population during this phase was the 77 provinces in Thailand, including Bangkok (special administrative area). The regional groups were divided into five groups: central, north, northeast, south, and east. The central region is composed of 19 provinces: Ang Thong, Chai Nat, Kanchanaburi, Krung Thep Mahanakhon, Lop Buri, Nakhon Nayok, Nakhon Pathom, Nonthaburi, Pathum Thani, Phetchaburi, Phra Nakhon Si Ayutthaya, Prachuap Khiri Khan, Ratchaburi, Samut Prakan, Samut Sakhon, Samut Songkhram, Sara Buri, Sing Buri and Suphan Buri. The north is divided into 17 provinces: Chiang Mai, Chiang Rai, Kamphaeng Phet, Lampang, Lamphun, Mae Hong Son, Nakhon Sawan, Nan, Phayao and Phetchabun. Northeast has 20 provinces: Amnat Charoen, Buriram, Bueng Kan, Chaiyaphum, Kalasin, Khon Kaen, Loei, Maha Sarakham, Mukdahan, Nakhon Phanom, Nakhon Ratchasima, Nong Bua Lamphu, Sakon Nakhon, Nong Khai, Roi Et, Sisaket, Surin, Ubon Ratchathani Udon Thani and Yasothon. The south included 14 provinces: Chumphon, Krabi, Nakhon Si Thammarat, Narathiwat, Pattani, Phang Nga, Phatthalung, Phuket, Ranong, Satun, Songkhla, Surat Thani, Trang and Yala. East consisted of 7 provinces: Chachoengsao, Chanthaburi, Chon Buri, Prachin Buri, Rayong, Sa Kaeo, and Trat.

3.2.4 Descriptive Statistical Analysis

Descriptive statistics was used to find the characteristics of the manufacturing SMEs in each region and describes the basic features of the manufacturing SMEs in six regions: the North, Northeast, Central, East, South, and Bangkok, which is a metropolis.

3.2.5 Multiple Linear Regression Analysis

Multiple linear regression analysis was applied in order to identify the factors and to find the direction of the relationship between the dependent and independent variables. It provides the comparative importance of the different variables and predicts the dependent variable outcome. The independent variables and the dependent variable were shown in Table 3.2. The equations, which show the relations between the independent variables and dependent variables derived from the conceptual framework in the previous chapter. Total sales was regarded as performance or the dependent variable.

$$REVENUE = \beta_1 + \beta_2 AGE + \beta_3 SIZE + \beta_4 TRAINPRD + \beta_5 TRAINMKT + \beta_6 EMRETENT + \beta_7 ENTREP + \beta_8 FUNDS$$

Moreover, the researcher applied a reliability test, a normality test, a linearity test, a homoscedasticity test, and multicollinearity to check the validity of the multiple linear regression method.

Table 3.1 Operational Definitions

Name	Independent/Dependent Variable	Level of Variable	Description	Unit
REVENUE	dependent	Ratio	Means of sales of manufacturing SMEs in each province at year t	baht
AGE	independent	Ratio	Means of age of manufacturing SMEs in each province at year t	year
SIZE	independent	Ratio	Means of employee numbers of manufacturing SMEs in each province at year t	number of employee
TRAINPRD	independent	Ratio	Proportion of manufacturing SMEs that have training in manufacturing activities for employees in each province at year t	percentage

Table 3.1 (Continued)

Name	Independent/Dependent Variable	Level of Variable	Description	Unit
TRAINMKT	independent	Ratio	Proportion of manufacturing SMEs that have training in marketing for employees in each province at year t	percentage
EMPERIOD	independent	Ratio	Mean of employment existence in each province	percentage
ENTREP	independent	Ratio	Numbers of entrepreneurs who feel lacking of entrepreneur/managerial knowledge in each province at year t	number of owner
FUNDS	independent	Ratio	Proportion of manufacturing SMEs in each province which lack funds in each province at year t	percentage

3.3 Second-Phase Methodology: Qualitative Method

In the second phase, the qualitative method was applied to assist with the explanation and interpretation of why certain factors identified in the first phase were significant predictors. The qualitative method activities allow us to look deeply into the details, provide opportunity for all possible variables, and provide more informed exploration (Holliday, 2007). Moreover, the qualitative method concerns a rich understanding of the context of the data and the open discussion process can contribute to a more completed interpretation (Rudestam & Newton, 2015).

The benefits of qualitative method are that these are compatible with the effort to confirm the results of the quantitative method and provide more complete interpretations. The limitation of the quantitative method or first phase in this research concerned the constraints in collecting further data sets. The OSMEP, the governmental organization that receives financial support by the government, spent

three years collecting the data used in this research. However, the data was not collected continuously because it was only a project during that period (2008-2010). Additionally, some SME managers believe that real information disclosure is a disadvantage for business. Therefore, qualitative method is important as the tool to confirm the result and explore more information behind the results.

3.3.1 Data Collection

As pointed out earlier, the research methodologies adopted in this study included a literature review, as well as a process study. Several methods were used in the data collection. Below is a discussion of the three important data collection methods used in this study.

Primary data were collected from 10 key person that were related to manufacturing SMEs. Face-to-face interviews were the method to collect the data. The key informants could discuss any barriers or success factors that affected the manufacturing SMEs and could provide the reason why and how each factor influenced the firm performance.

3.3.2 Interview Methods

In this research, the interview method was used to fulfill and confirm information in order to achieve the objectives of the study. It is a tool that is an open-ended, discovery-oriented method that allows the researcher to deeply investigate the answers from the informants. The rich information obtained provides further findings or explanations relevant to the topics discussed.

Qualitative interviews can be categorized into three types: unstructured, semi-structured, and structured (Maxwell, 1996; Strauss and Corbin, 1998).

1) Unstructured interviews – these begin with general ideas or topics that participants are concerned about. The questions can be changed depending on the participants' answers. The questions are also open-ended, allowing the participants to broaden their answer.

2) Semi-structured interviews – theses begin with a study of the literature or topic before asking the questions. However, researchers are allowed to ask other related questions in order to be sure that they understand. Moreover, the

interviewer can spend extra time in asking questions if the answer contrasts other participants' opinions.

3) Structured interviews – these begin with an explanation of ideas or topics in order to establish the understanding of the participants. Moreover, the researcher prepared a series of questions to ask the participants in a sequence in order to ensure that all of the information has been received from all interviewees.

In this research the researcher focused on semi-structured interviews because structured interviews do not allow the interviewer to explore more information. Additionally, semi-structured interviews are more flexible and provide a discussion between the researcher and the informants in order to explore their opinions on relevant topics (Flower & Mangione, 1990). Not only was each factor investigated, but also the understanding of the performance or the dependent variable in the multiple linear regression was examined using the semi-structured interviews in order to be certain of the definition of performance from the owner's/manager's point of view.

3.3.3 Validity

A qualitative study can possibly be biased because of several factors, for example, the selection of the sampling, time differences, and location differences. There are various tools that can be used to check the validity in a research. For example, to solve the bias problem, the sampling selection should reflect the population, and the location should be related to the research questions and objectives.

Additionally, triangulation is one of the interesting methods to check validity. Triangulation is a method that uses various research methods to measure one factor. Moreover, triangulation can extend the findings, for example in the combination of theories and research methods (NaRanong, 2011). In order to reduce bias and to make sure that the study was valid, the triangulation method was applied in this research. The method was composed of multiple linear regression, semi-structured interviews, and literature reviews, as can be seen in Figure 3.2.

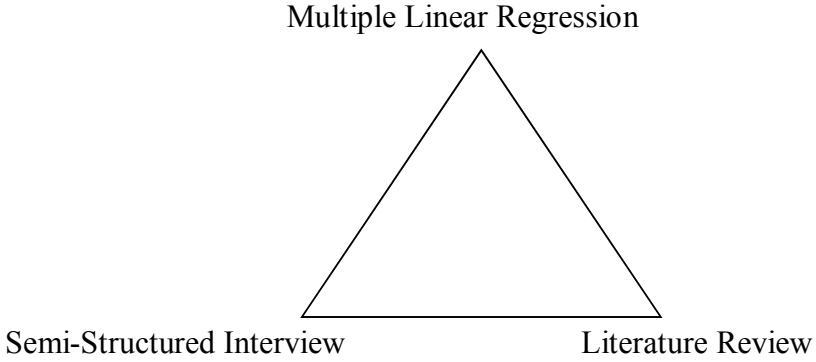


Figure 3.2 Triangulation

Jick (1979) suggested that triangulation provides several opportunities for researchers:

1) It is the multi-method design; therefore, the strength of each method leads to reliable results.

2) It can create an inventive method and help to discover new dimensions of the study/theory.

3) The different points of view from different results can lead to enriched explanations and can combine or integrate theories.

4) Triangulation can serve as a validity test by cross-checking each research method.

CHAPTER 4

RESULTS

In this chapter, the answers to the first and second research objectives are presented, i.e., to examine the important factors influencing the performance of manufacturing SMEs and to investigate the reason why these factors influence the performance of manufacturing SMEs. The findings and results from the multiple linear regressions will answer the first objectives and the findings and results from the in-depth interviews will answer the second objectives. The details are as follows.

4.1 Analysis of Factors Affecting Manufacturing SMEs' Performance

The focus of the first research question was to identify the factors that impacted SME performance. As discussed in Chapter 3, multiple linear regression techniques were used for analyzing the data of this research in order to determine the factors that affect the performance of manufacturing SMEs.

4.1.1 Outlook and Distribution of Samples

The data were secondary data collected by the Office of SMEs Promotion (OSPMEP) from 2008 to 2010. There were 10,118 respondents that owned or managed manufacturing SMEs that answered the surveys. In this section, the overall picture of the demographic characteristics is described.

4.1.1.1 Distribution by Region

The sample manufacturing SMEs are divided into six categories: north, south, northeast, east, central, and Bangkok. The distribution by region is shown in Table 4.1.

Table 4.1 Distribution of Sample Firms by Region

Regions	Distribution of Sample Firms (Number)	Regional Distribution of Sample Firms (Percent)
North	707	6.99
South	861	8.50
Northeast	502	4.96
East	788	7.79
Central	4676	46.21
Bangkok	2584	25.54

The sample firms are grouped into province and regarded as the unit of analysis. Although the percentages of the distribution in each region were quite close to each other, the central region and Bangkok presented the highest number of firms. It represented that most manufacturing SMEs ae mostly located in Bangkok and the central areas.

4.1.1.2 Overall Revenue Classified by Region

One of the interesting characteristics of the sample firms was the revenue classified by region. The average revenue in each region is illustrated in Figure 4.1. The revenue is the focus point in this research as the measurement of performance.

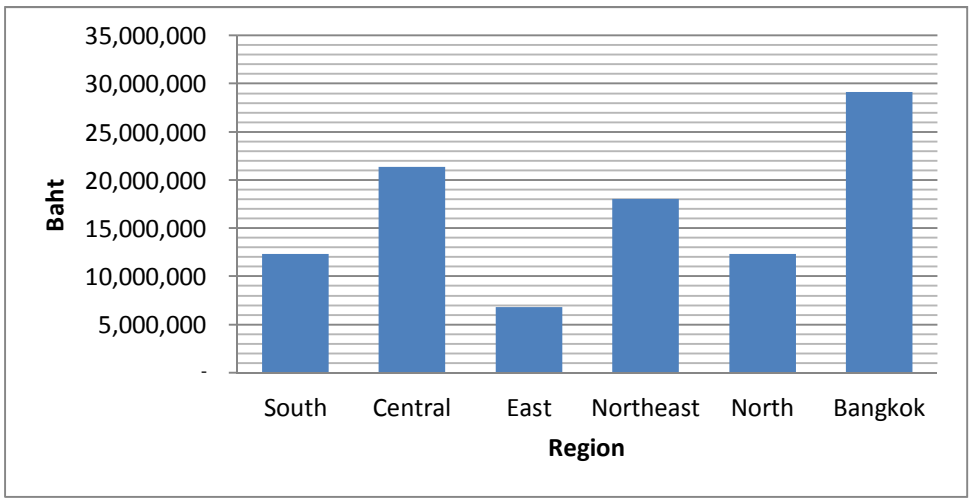


Figure 4.1 Average Firm's Revenue in Each Region Classified by Region

It can be seen that the revenue in Bangkok and the central area is notable as the highest performance compared to other regions. Although the east has the largest industrial estates, such as the Hemaraj Eastern Seaboard Industrial Estate, the Laem Chabang Industrial Estate, the Pinthong Industrial Estate, and the Amata Nakorn Industrial Estate, the sample in east performed the lowest. According to the statistical data, the minimum revenue was 500,000 baht per year, the maximum revenue was 400,804,564 baht per year, and the average revenue was 25,490,644 baht per year.

4.1.1.3 Overall Employees' Year of Working Classified by Region

Other interesting data of the sample firms were the employees' years of working classified by region; the averages for each region are illustrated in Figure 4.2. Employee retention was one of the factors influencing firm performance.

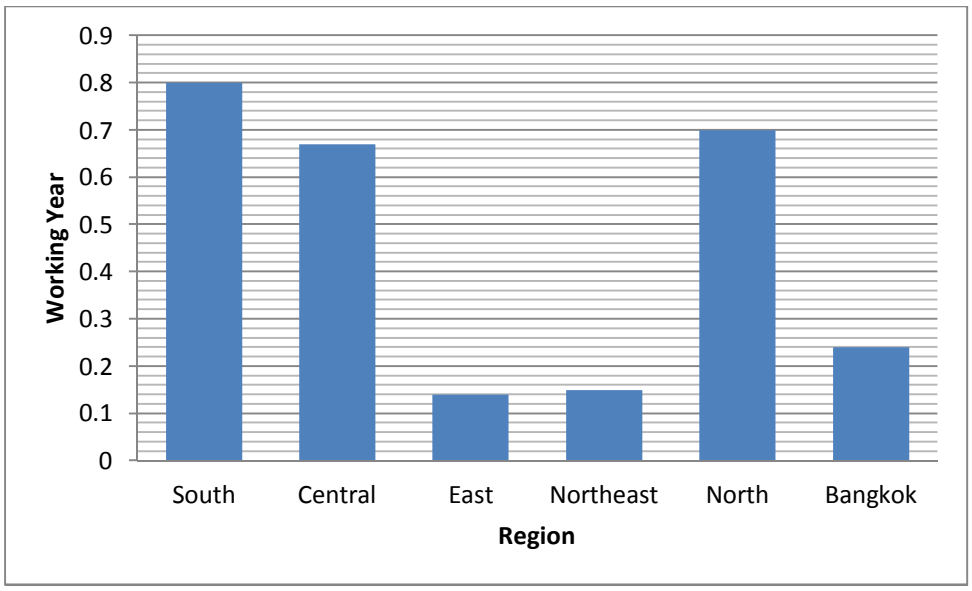


Figure 4.2 Overall Employees' Year of Working Classified by Region

The figure shows that the sampled firms in the south, central, and north retained employees for more than 0.6 years. However, the sampled firms in the east, northeast, and Bangkok retained employees for only 0.14, 0.15, and 0.24 years.

4.1.1.4 Average Number of Employees Classified by Region

Number of employee or firm size is one of the factors that were investigated by various researchers. Figure 4.3 demonstrates the average of number of employee classified by regions.

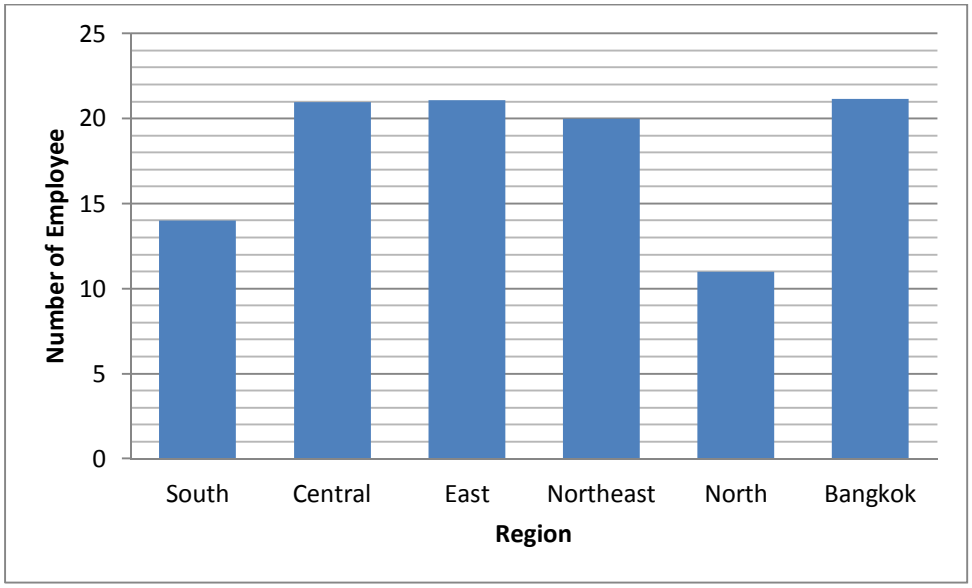


Figure 4.3 Average Number of Employee Classified by Region

The figure shows that the sampled firms in the central, east, and northeast regions and Bangkok had an average of number of employees of approximately 20. However, the average of number of employees in the south and north was only 14 and 11 respectively.

4.1.1.5 Average Age of Existence of Firms Classified by Region

The age of the firm is another factor that was debated. The years of existence of the sampled firms in each region are demonstrated in Figure 4.4.

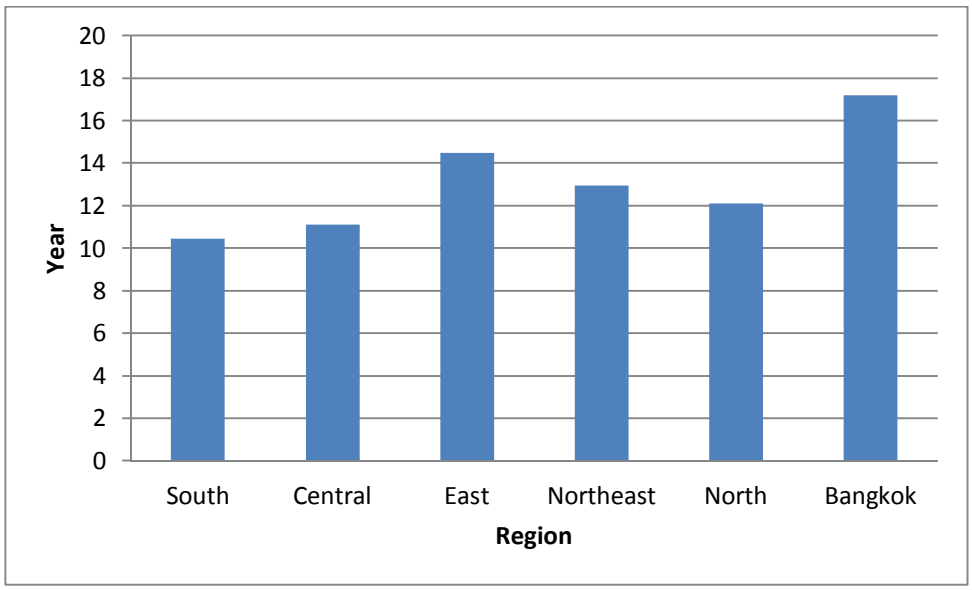


Figure 4.4 Average Age of Existence of Firms Classified by Region

The figure shows that the firms in Bangkok were the oldest at 17.21 years while other regions had an average age at around 10 to 15 years. The firm age in the east, northeast, north, and central regions was 14.5, 12.95, 12.12, and 11.13 respectively. The firms in the south had the lowest average age at 10.46. In other words, the characteristics of the firms classified by region in terms of age were slightly different.

4.1.1.6 Average Percentage of Production Training and Marketing Training Classified by Region

Training is regarded as an important instrument in terms of enhancing employee performance. It is interesting that most manufacturing SMEs considered that production training was more important than training in marketing. Although most SMEs did not consider training as an important activity, it seemed to be significant for manufacturing SMEs.

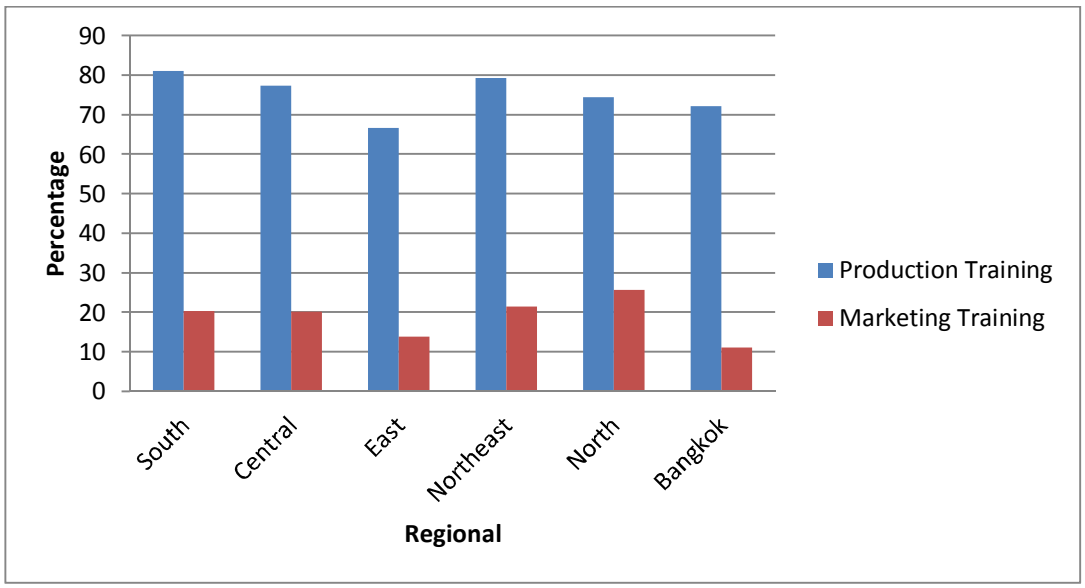


Figure 4.5 Average Percentages of Production Training and Marketing Training Classified by Region

The bar chart indicates that a majority of firms held training on production. However, only 20 percent of firms had training in marketing. The manufacturing SMEs in the south, central, northeast, north, and Bangkok regions revealed that more than 70 percent of them had production training. The east had the lowest percentage of training in production at 66.67 percent. At the same time, the north had the highest percentage of training in marketing at 25.77 percent. Compared to production training, marketing training was less popular because the percentage of marketing training was lower than 30 percent in all regions.

4.1.2 Multiple Linear Regression Assumptions

In reality, it is difficult to predict or estimate any value in a linear way. Therefore, it is important to reduce the errors in the prediction. In order to ensure goodness of fit, there are four basic assumptions for linear regression (Osborne & Waters, 2002).

1) The variables must have normal distribution.

2) The relation of the dependent and independent variables must be linear.

3) Homoscedasticity - the disturbance terms should have the same variance and should not be correlated with one another.

4) No multicolinearlity - two or more independent variables are linearly related in the sample data.

Therefore, different statistical tools have been applied to test and ensure that the proposed model has met the assumptions.

4.1.2.1 Normal Distribution

Multiple linear regressions assume that all variables must be normal because a non-normal distribution can distort the relationship and significance of the test. The assumption of normal distribution can be generally checked by quantile-quantile plot or q-q plot. Therefore, the q-q plot is illustrated in Appendix A.

4.1.2.2 Linearity Test

Multiple regressions can predict the relationship between the dependent and independent variables when the relationship is linear. It is important to ensure that the relationship is linear because the non-linearity relationship between the dependent and independent variables will lead to under-estimation and over-estimation. Osborne and Waters (2002) suggested that the preferable method to check for a non-linear relationship is to examine the residual plot as a scatter plot. The scatter plot shows the standardized residuals for the independent variables against the dependent variables. Moreover, the use of previous literature is also another method to inform the current analyses. Therefore, the scatter plot of the linear relation between the dependent variables and the independent variables in this research was conducted and is shown in Appendix B.

4.1.2.3 Homoscedasticity Test

Homoscedasticity means that the variance of errors is the same across all independent variables. If the variance of errors across the variable is different, heteroskedasticity will be found and it could distort the findings (Osborne & Waters, 2002). This research conducted the white test to be the test for heteroskedasticity. Kennedy (2008) explained that the strength of the white test is to investigate any heteroskedasticity that causes the variance-covariance matrix of the OLS estimator. The results are presented in Appendix C.

4.1.2.4 Multicollinearity Assessment

Multicollinearity is a state in which the independent variables are highly correlated among the independent variables. If the independent variables are correlated, it is a type of disturbance data and reduces the reliability of the multiple regression model because it may cause misinterpretations. This research attempted to detect multicollinearity using the variance inflation factor (VIF). The VIF is $1/(1-R^2)$. The VIF was calculated for each independent variable by conducting a linear regression of that variable on other all variables. Therefore, a high VIF indicates high multicollinearity.

Table 4.2 VIF Value

Variable	**VIF**
C	NA
SIZE	1.111641
AGE	1.133925
TRAINPRD	1.084926
TRAINMKT	1.028995
EMRETENT	3.384975
ENTREP	3.398517
FUNDS	1.035801

Most VIF values in this regressor shows that they were below 1.5. There were only two variables that exceeded 3; however, the maximum VIF value was only 3.3985. All VIF values are shown in table 4.1. Kennedy (2008) suggested

that VIF>10 indicates harmful collinearity for standardized data. In summary, this repressor had no harmful collinearity.

4.2 The Results for the Multiple Linear Regression Model

According to the conceptual framework in chapter three, the multiple linear regression equation was estimated as follows:

REVENUE= β1+β2AGE+ β3SIZE+ β4TRAINPRD+ β5TRAINMKT+ β6 EMRETENT + β7ENTREP+ β8FUNDS

4.2.1 Descriptive Statistics

This section discusses the REVENUE predicted by age of the firm, size of chapter firm, training in manufacturing activities, traning in marketing, employees' years of working, managerial capability, and access to financial support. All 77 sample provinces were calcualted and their means and standard deviations are presented in Table 4.3.

Table 4.3 Means and Standard Deviations of Independent Variables

Factors	Mean	Standard Deviation
SIZE	14.20773	6.851200
AGE	12.17107	1.362706
TRAINPRD	0.666607	0.292598
TRAINMKT	0.133916	0.174087
EMRETENT	0.558133	0.694088
ENTREP	19.05333	28.97804
FUNDS	0.471323	0.228786

4.2.2 Multiple Linear Regression Results

The focus of this research was to investigate the factors affecting the performance of manufacturing SMEs. This model was used to answer the first research question:

What are the factors that affect the performance of manufacturing SMEs?

In order to examine the significance of each factor and the relations of the dependent and independent variables, the results were explored. The results of the regression equation are show in Table 4.4.

Table 4.4 Multiple Linear Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.11155	1.054274	12.43657	0.0000
SIZE	0.109853	0.016548	6.638621	0.0000**
AGE	0.041670	0.084025	0.495919	0.6216
TRAINPRD	1.513974	0.382779	3.955217	0.0002**
TRAINMKT	-0.493032	0.626555	-0.786893	0.4341
EMRETENT	0.797590	0.285025	2.798315	0.0067**
ENTREP	-0.016433	0.006841	-2.402303	0.0191*
FUNDS	0.108756	0.478332	0.227365	0.8208
R-squared	0.526986	Mean dependent var		16.30599
Adjusted R-squared	0.477566	S.D. dependent var		1.279735
S.E. of regression	0.924987	Akaike info criterion		2.782464
Sum squared resid	57.32529	Schwarz criterion		3.029663
Log likelihood	-96.34241	Hannan-Quinn criter.		2.881168
F-statistic	10.66354	Durbin-Watson stat		2.006192
Prob (F-statistic)	0.000000			

Note: ** Significance of $p < 0.01$, * Significance of $p < 0.05$

In Table 4.4, the results of the coefficient analysis can be seen. There were seven independent variables in the model. The variables consisted of SIZE, AGE, TRAINPRD, TRAINMKT, EMRETENT, ENTREP and FUNDS. The coefficient of these seven variables was statistically 0.109, 0.041, 1.513, -0.493, 0.797, -0.016, and 0.108 respectively. A significant p-value (< 0.05) indicated that a predictor as meaningful because it was related to the changes in the dependent variables. The variables that had a significant p-value were SIZE, TRAINPRD, ENRETENT, and ENTREP with the value of 0.0000, 0.0002, 0.00067, and 0.0191 respectively.

Moreover, SIZE, TRAINMFC, ENRETENT were the three predictor variables that had a high significant level with a p-value <0 .01.

Conversely, a p-value (> 0.05) indicated that a variable was not related to the changes in the response variable. The variables where the p-value was greater than 0.05 were AGE, TRAINMKT, and FUNDs, with the value of 0.6216, 0.4341, and 0.8208 respectively. The R^2 indicates 0.526, which means that 53 percent of the variance in the factors affecting the SMEs' performance could be explained by the combined influence of the seven independent variables. Regarding the multiple linear regression analysis and results, the regression model for the factors affecting the performance of manufacturing SMEs can be written as follows:

REVENUE=13.111+0.109SIZE+0.0416AGE+1.513TRAINPRD
-0.493TRAINMKT+0.797EMRETENT -0.016ENTREP+0.108FUNDS

The hypothesis testing results are summarized in Table 4.5.

Table 4.5 Summary of Hypothesis Test

Hypothesis	Variable	Result
H1: Older firms have a positive relationship with the revenue of manufacturing SMEs.	AGE	No significant relationship
H2: Larger firms have a positive relationship with the revenue of manufacturing SMEs.	SIZE	Significant/ positive correlation with coefficients value of 0.109
H3: Training in production capability has a positive relationship with the revenue of manufacturing SMEs.	TRAINPRD	Significant/ positive correlation with coefficients value of 1.513

Table 4.5 (Continued)

Hypothesis	Variable	Result
H4: Training in marketing capability has a positive relationship with revenue of manufacturing SMEs.	TRAINMKT	No significant relationship
H5: Employee retention has a positive relationship with the revenue of manufacturing SMEs.	EMRETENT	Significant /positive correlation with coefficients value of 0.797
H6: Low managerial capability has a negative relationship with the revenue of manufacturing SMEs.	ENTREP	Significant/ negative correlation with coefficients value of 0.016
H7: Access to financial support has a positive relationship with the revenue of manufacturing SMEs.	FUNDS	No significant relationship

This section presents the findings for the first research question: What are the factors that affect the performance of manufacturing SMEs? The findings in this section will be further explored using the qualitative method to answer the second research question: Why do these factors influence the performance of manufacturing SMEs? Therefore, the next section will show the results of the in-depth interviews.

4.3 Qualitative Method Analysis

This section presents the answer to the second research objective. In order find out the reason why the factors influenced the manufacturing SMEs' performance, it is more advantageous to use both quantitative and qualitative methods. The qualitative method allows the researcher to understand the phenomenon deeply. Field research also provides the opportunity for the researcher to observe the participants' attitudes, perceptions, actions, and their environment. Additionally, it increases the strength of the study. Cresswell (2003) explained that the qualitative method provides an understanding of the attitudes, opinions, and ideas of the selected participants.

Moreover, the qualitative method is an important part of triangulation, which helped to make this study meet the requirement of validity. The different sources of data and different methods supported and checked each other in arriving at comprehensive findings. Triangulation is a validation process that uses two or more methods to examine and compare the results of the study (Jick, 1979).

The semi-structured interviews were used as tool for the qualitative method. During the interview, the interviewer allowed space for discussion and further opinion expression concerning the issues. The main objective of the interviews was to obtain a better in-depth understanding of the influencing factors and how these factors impacted the performance of their firms. In order to meet the objectives of the study, the researcher applied a comparative method. The quantitative and qualitative findings were compared and are discussed in chapter five.

4.3.1 Qualitative Questions

To investigate why each factor affected SMEs performance; the following questions were explored with the selected participants:

1) PERFORMANCE
   (1) What are the indicators of firm performance?
   (2) Why did you measure firm performance with this indicator?
2) SIZE (Number of Employee)
   (1) Does the number of employees influence your firm's performance?
   (2) How does the number of employees influence your firm's performance?
3) AGE (Age of Firm)
   (1) Does the age of your firm influence your firm's performance?
   (2) How does the age of your firm influence your firm's performance?
4) TRAINPRD (Training in Production Capability)
   (1) Does the training in production skills and knowledge influence your firm's performance?

(2) How does the training in production skills and knowledge influence your firm's performance?

5) TRAINMKT(Training in Marketing Capability)

(1) Does the training in marketing skills and knowledge influence your firm's performance?

(2) How does the training in marketing skills and knowledge influence your firm's performance?

6) ENTREP (Managerial Capability)

(1) Do managerial skills and knowledge influence your firm's performance?

(2) How do managerial skills and knowledge influence your firm's performance?

7) FUNDS (Funds/Financial Support)

(1) Do funds/financial support influence your firm's performance?

(2) How do funds/financial support influence your firm's performance?

4.3.2 Participant Selection

The units of analysis were owners and managers from the selected manufacturing SME firms. The owners' and managers' level was regarded as the key informants because SMEs have a simple organizational structure. Most decisions and managerial activities are carried out by them. Moreover, the small number of employees compared to large firms allows owners to work closely with their employees. The firms from different industries were selected to be participants in order to receive answers related to a variety of dimensions.

As regards confidentiality, the information and data received from the participants during the interviews were referenced as codes, and therefore the participants' positions as listed as codes in Table 4.6. However, the participant's name, position, and firm are not presented.

Table 4.6 Codes for the Participants from Various Industries

Participant's Code	Position in Firm
GM	General Manager
OW	Owner

4.3.3 Method of Data Collection

As mentioned earlier, qualitative data are particularly appropriate for obtaining in-depth data and the circumstances and reasons behind them. However, there are various tools for the qualitative method, for example, interviews, focus groups, reflective journals, field notes, anecdotal evidence, and logs and observations.

This section describes the data collection methods that were used in this research. James et al. (2008) pointed out that face-to-face interviews allow the participants to reveal information by describing their own experiences and opinions. Moreover, face-to-face is flexible and allows researchers to expand and heighten the results during this procedure. Face-to-face interviews are a traditional method for obtaining information that is rich and allows the researcher to notice slight differences, and therefore this method can extend the subjects to collect (Englander, 2012).

First, the researcher made an attempt to make an appointment with the entrepreneur of the manufacturing SMEs from every industry group. However, during the invitation process, the researcher found that older entrepreneurs aged above 50 felt uncomfortable being interviewed because they did not want to reveal any problems or successful cases. Moreover, some entrepreneurs did not want to share their experience with others because they regarded it as a sensitive issue. In order to access the participants, the researcher invited them through personal connections. The selected interviewees were mostly willing to share their experiences and opinions because they were familiar with the researcher.

The researcher made an appointment by telephone, explaining the objective of the interview and let the interviewee select the location for it. Some of the participants preferred to have an interview at their office or plant, and thus researcher had an opportunity to collect data about their environment and workplace. However,

some of the participants preferred to have an interview outside their workplace. Another difficulty was that most of the participants were not comfortable with a voice recorder, and therefore the researcher had to take the notes on paper, and for this reason some of the interviews take more than three hours.

To make the participant feels relaxed, the researcher began with a general conversation and general economic topics. After that, the researcher provided an overview of the topics that the study focused on. Then, the researcher asked the first question.

4.3.4 Overview of Participants

In this analysis, the participants were referred to with given code. There were ten interviewees from different industry groups consisting food products and beverages (ISIC 15), wearing apparel (ISIC 18), luggage, handbags, saddler, harness and footwear (ISIC 19), publishing, printing and reproduction of recorded media (ISIC 22), chemical products (ISIC 24), rubber and plastic products (ISIC 25), basic metal (ISIC 27), machinery and equipment (ISIC 29), and furniture (ISIC 36). The participant codes are described in Table 4.7.

Table 4.7 Participants' Code

Participants' Code	ISIC 15	ISIC 18	ISIC 19	ISIC 22	ISIC 24	ISIC 25	ISIC 27	ISIC 29	ISIC 36
GM1						X			
GM2				X					
GM3					X				
GM4	X								
OW1					X				
OW2			X						
OW3		X							
OW4							X		
OW5								X	
OW6									X

The selected firms were manufacturing SMEs where the number of employees as between 10 and 200. The majority of the interviewees had experience in their field of more than eight years. The education background varied both in terms of the

degree of education and the field of study. Moreover, the age of the interviewees was divided into two groups. The first group was composed of individuals more than 60 years of age, and most of them established the firms by themselves. The second group was comprised of those around 30-40 years of age, and the majority of them were second-generation owners, while some of the entrepreneurs established their firm by themselves. In the case that the young entrepreneur established the firm by him/herself, the firm age was less than 20 years, while the age of other firms was mostly over 20 years. The demographics of the participants are described in Table 4.8.

Table 4.8 Demographics of the Participants

Participant's Code	Participant's Age	Sex	Generation	Firm Age	Firm Type Classified by Number of Employees
GM1	>60	Female	Founder	>20	Small
GM2	30-40	Male	Successor	>20	Medium
GM3	>60	Male	Founder	>20	Small
GM4	30-40	Female	Successor	>10	Small
OW1	30-40	Female	Successor	>20	Medium
OW2	30-40	Male	Founder	>10	Small
OW3	30-40	Female	Founder	>10	Small
OW4	>60	Female	Founder	>30	Medium
OW5	30-40	Female	Successor	>20	Medium
OW6	>60	Female	Founder	>30	Medium

All firm ages were over 10 years because the researcher focused on firms that successfully survived in the market. It is interesting that it was difficult to find the owner's or manager's age between 40-60 years. Six out of ten participants were female while there were four male interviewees.

4.4 Results of the Qualitative Analysis

This section is the analysis of the seven factors affecting the performance of manufacturing SMEs. The core of this section is to answer the second research question: Why do these factors influence the performance of manufacturing SMEs? In order to investigate these factors, this analysis was based on data from the face-to-face interviews with the participants related to the management of the manufacturing SMEs.

The conceptual framework in this section is from chapter two, which indicated seven factors influencing firm performance: firm size, firm age, training in production capability, training in marketing capability, managerial capability, and access to financial support. Each factor is analyzed one by one. Moreover, the definition of firm performance will be explored.

4.4.1 Overview of Performance Indicators

The core vision of an interviewee for being an entrepreneur of a manufacturing SME is to gain a better income. Therefore, the ultimate goal of the firm is to gain revenue and a profit. All of the interviewees measured their performance by using indicators such as income and profit. The majority of the interviewees focused on revenue because they feel that it is impossible for SMEs to have a large profit with a small sales volume and they have to keep records annually to compare the firm's performance in each year. OW4, who has had experience in her business for more than 40 years, described this situation in the following.

> The most important part of doing business is to run the business continuously every day because we have to make sure that we have income every day to gain the highest revenue. If we think about the profit too much, we could not compete with anyone. If we don't have enough revenue, we could not maintain our workforce and the business could not survive without them. It is clear that we focus on annual income rather than monthly income because sometimes we receive a small income in order to get a bigger income in the future.

Additionally, GM1 and GM3 agreed that they have a lot of competitors in the market and that their products could be substituted by other products. Thus the selling prices are mostly controlled by market price. It is impossible to gain as much profit as larger enterprises, and thus they tried to get as many orders as possible rather than thinking about profit. Secondly, GM2 and OW1 expressed the idea that they have low potential to negotiate with larger firms. GM2 stated that the customers that are large firms/institutions indicated the payment conditions and selling prices and that there was no room for him to negotiate. OW1 and OW4 pointed out that their products must be sold through department stores and supermarkets, which are large enterprises; therefore, they have low negotiating power and must accept every condition offered by the large firms. Although they have made an attempt to sell directly to customers, the quantities of the orders are not enough for surviving.

Moreover, GM1, GM3, and OW6 confirmed that the manufacture have fix costs, such as employee salaries and machine maintenance costs. It is better to gain some income to run a business continuously even when they have no profit. They stated that it is difficult for manufacturing SMEs to reduce their costs. They could not sell their only few machines and they already operate the production line with a minimum number of employees, as OW1 stated in the following.

> I usually regard revenue as an indicator because it is easy to understand the broad picture of a firm in each year. When I compared the performance between my company and competitors, I just saw the revenue to see who can gain a better income. It is difficult to regard the profit because the investment could decrease the profit. When I invested in a new machine, I almost did not have any profit. Thus, we could not say that their performance is not good because they have a low profit.

However, OW2 and OW3, who could sell directly to customers, felt that profit is beyond revenue because the high amount of sales requires more expenditure and time. However, enough total income is still important in order to cover expenditures. It is interesting that both of them sell a customized design product and the owners have specific skills for producing the goods by themselves.

Although eight out of ten interviewees had the same attitudes in defining revenue as the most important performance, they had different views of the other

performance indicators, which they regarded as a minor priority. GM1, GM2, GM3, OW1, and OW5 focused on delivery. They indicated that a large firm's customers have a penalty fee for delays, and thus it is important for them to keep shipment deliveries on schedule. OW5 revealed as following.

> The reason why we place priority on delivery is the penalty fee. Most large enterprises come with contracts which consist of commercial conditions and delivery conditions that we have to accept before getting the order. If we cannot meet the target delivery, we have to pay a penalty fee each day. We have had experience with delays of big shipments and finally we lost money in that year. They did not allow us to explain or compromise because they have to follow the contract as well.

GM4 and OW2 emphasized product quality. They inspected 100 percent of the finished products to make sure that all of them met the standard before submitting them to customers. They believed that the quality of products makes differentiates their products from Chinese products, which are cheaper than their products. OW3 and OW 6 mentioned customer satisfaction—they believe that the customer satisfaction will lead to the customer loyalty and repeat orders. They emphasized customer relation and providing the best service. It is interesting that OW4, whose firm is the oldest among the interviewees, talked about employee satisfaction. She confirmed that employee satisfaction will lead to sustainable growth and reduce internal problems such as communication problems, employee turnover problems, and dishonesty problems.

To conclude, most interviewees regarded revenue as the main performance indicator. However, the manufacturing SMEs that have a unique product preferred to be concerned about profit. Moreover, product delivery, product quality, customer satisfaction, and employee satisfaction were mentioned as the second indicator.

4.4.2 SIZE (Number of Employees)

In Thailand, an SME in the manufacturing sector that has under 50 employees is considered a small enterprise and the enterprises that has between 50 and 200

employees is considered a medium enterprise. Therefore, the interviewees were separated into two groups: small enterprises and medium enterprises.

However, the answers of these two groups were stated in the same direction. They confirmed that small-size firms have a higher risk in terms of an insufficient size workforce, which can affect production effectiveness. If the production cannot meet the customers' requirements or target delivery specifications, it is difficult for them to maintain customers and gain a better reputation. In the worst case, the lack of manpower for operating the production line may lead to the business closing down.

GM1, GM4, and OW5 expressed the notion that the machines that have been installed in the production plant are semi-automatic and require human labor to operate. Therefore, it is difficult for them to operate the production line continuously if there are not enough employees. Although they know that the number of employees is too small to handle some situations, such as employee accidents and when the employees take a long leave, they have decided to accept this risk because cost control is more important. GM 4 further explained as follows.

> I understand that there are a lot of technology and automatic machines that can reduce the dependency on the human workforce. However, technology is very expensive and does not have the common sense of humans. My product is fish sauce and I have to compete with large enterprises. Of course, although I have better machines, they are still not as good as the machines in a large enterprise. Therefore, I have tried to make a difference by focusing on better raw material, better smell and better taste. To select the raw materials, it is impossible to use automatic machines. Moreover, it is still better to use semi-automatic machines that allow humans to detect the process of production.

GM3, OW2, OW3, and OW6 stated that they never have enough employees. They are willing to expand the capacity of their production; however, they found a problem with recruiting qualified or high-skilled labor. Although they announced employment vacancies on a well-known website, it is difficult for them to receive employee applications. Moreover, it is not worth it for them to hire a third party to take care of recruitment, as GM 3 expressed below.

> I have a plan for a number of employees in each department; however I never have enough employees in the production department or sales department. In the production department, it is very difficult to find job applications for the mechanic position. I guess that we don't have enough mechanics in the labor market. Most of the new generation prefers to work as administrative officers rather than practitioners. In the sales department, I found that there are a lot of people that have graduated in marketing but they do not want to be salespersons. They feel that salespersons have too many responsibilities and too much pressure. In my opinion, salespersons are provided a chance to know the market and customers' needs. You cannot be a good marketing planner without experience in sales but they do not understand this point. Compared to my generation, the young generation lacks patience and the attitude of a fighter. It can be seen that the most available jobs on recruiting website are salespersons. That is why I never have enough human resources.

GM3 and OW4, who have had experience in the production field for more than 40 years, pointed out that nowadays the new generation of Thai people are willing to work as administrative officers more than specialists or skilled laborers in the production plant, although they have tried to persuade new employees that the salary and compensation are higher. The attitudes of employees are different from their generation. The new generation employee tends to value a work-life balance, while their generation's attitudes emphasized earning money.

OW3 and O6 understand that their company's names are not well-known and are not attractive for newly-graduated students. Additionally, the workers in the production section have a high rate of turnover, and some employees stay in firms less than six months, as OW 3 revealed below.

> It is very difficult for a small-size firm to obtain qualified employees because most of them feel that small-size firms are not secure. Additionally, they feel that being an employee in a large firm which has a well-known reputation makes him or her a cool person. Therefore, the larger firms have a higher advantage in recruiting potential employees.

Therefore, it can be said that the larger firms tend to have an advantage over smaller firms because the manufacturing SMEs in Thailand are struggling to expand their workforce and to recruit potential employees. If the size is too small, it is very difficult to hire new employees and to make them feel secure.

4.4.3 AGE (Age of Firm)

The age of the firm is one of the factors that were viewed differently by the interviewees. It was thought that it could be an advantage, a disadvantage, or that there was no relationship between firm age and firm performance.

GM3 and OW6, who were older than 60 years, confirmed that older firms may have better performance because of experience, networks, and negotiation power. OW6 explained this in the following.

> It is very difficult when I established the company but now everything is much easier. For example, newer companies have less experience and fewer project references, so they have a lower reputation and history. A low company profile can make customers lack confidence when assigning important jobs to it. Moreover, it is difficult for them to acquire financial credit from suppliers and commercial banks, which is very important for cash flow management. If you have less experience, your negotiation power also is less because you have less evidence of success to persuade customers or other related suppliers to trust you.

However, GM1 and OW4 had different opinions from GM3 and OW6. They felt that innovation in the present world and in the globalization era has caused a disadvantage for older companies, as OW 4 expressed in the following.

> The globalization in this decade has made everything change very fast. I think that newer companies may have better knowledge about the Internet, computers, and innovation. Most of my employees are of the same generation as me, and it is difficult for them and me to chase the new technology as well. Although we have young employees, it is difficult to teach and change the behavior of older employees. I know that technology and innovation may bring us benefits from globalization, such as seeking new overseas suppliers or

> customers and searching for better machines, but it too difficult to make my employees understand. Additionally, I do not have a policy to fire my employees that have been beside me since the beginning.

OW2 and OW3 are the young founders of manufacturing firms. Their firms' age can be regarded as the youngest compared to the firms of the other interviewees. This confirmed that performance does not depend on the firm's age but depends on what the firm has. OW 2 stated the following in this connection.

> The firm's age is not important. The most important factor is the quality of resources. I am lucky that my parents supported my idea and thus I modified their old buildings to be my office and factory. Moreover, I succeeded in persuading professional crafts persons to work with me. However, the most difficult thing at the early stage was the internal communication with the crafts persons and the production workforce. It is difficult to have the same understanding because they have their own ideas and different working styles.

GM2 and OW5, working as firm successor, did not confirm whether the firm age had a positive effect on the firm's performance or not. They expressed the idea that it was difficult to work with the founding generation, both at the management level and the employee level. However, they admitted that it was an advantage for firms to already have some resources, such as customers, funds, skilled labor, and machines. GM2 expressed the following in this connection.

> To be a successor, I have a lot of trouble in communicating with the older generation but it has a lot of advantages as well. I am not worried about firm performance because the existing resources are good enough, for example, the main customers, main suppliers, financial stability, and skilled labor and machines. It is really difficult for new firms to have satisfactory performance because it is not easy for them to share the market. Therefore, I intend to maintain the market share and expand the market to increase the revenue. I am confident that my firm's potential will defeat the newcomers.

OW5 agreed with GM4 about the advantages of resources; however she suffered from working with older employees as well.

> I agree that the performance of my company has dropped very little compared to competitors in the same business because I have better resources. However, there has been some difficulty in improving the firm's performance. I have struggled with older employees that are stubborn because they believe that they have more experience. I have spent a lot of time to explaining to them so that they understand the importance of new tools such as stock management programs and financial record programs, but with no success. Sometimes, we have spent all day discussing and debating about the decision-making on just one topic. I have to keep them, although they are old and stubborn, because they can communicate with the blue collar workers in the production line. To me, it is not easy to find a substitute worker that I can trust.

To sum up, the age of the firm and the firm's performance were seen above to have not direct relation because the internal conditions and external environment of each firm are different. The internal conditions are composed of existing resources. If the firm's resources, such as technology, labor, funds, number of customers, and the management system, are highly efficient, the firm will have a positive performance. In contrast, if the firm's resources are not efficient, the firm will have a negative performance. Additionally, the economic situation in each industry can be different. GM2, whose firm is involved in the publishing, printing, and reproduction of recorded media (ISIC22), confirmed that it is almost impossible for this industry to establish new firms because the economy of this industry is in decline. Therefore, the business cycle of each industry is also another reason for improving firm performance. If a recession period of the industry is coming, young firms will have little opportunity to gain better performance than older firms.

4.4.4 Employee Training

In this researcher paper, training was separated into two categories because most manufacturing SMEs have two main departments—the production department and the sales and marketing department. The first category concerns formal training in

production capability. The second category involves formal training in marketing capability.

4.4.4.1 Formal Training in Production Capability

Most interviewees' attitudes regarded training as time- and cost-consuming activities, although they understand that it can enhance employee productivity. However, most of them have to conduct training sessions for employees in the production department. They agreed that it is impossible for employees to run a production line without any training. Although they graduated from school or university, the education system did not provide them with the necessary skills, knowledge, and attitudes about working. Therefore, training can enhance the capability of employees and improve their productivity efficiency.

GM2, GM3, OW1, and OW5 conducted both formal training and on-the-job training. The formal training was held for better understanding of the company and its products. Moreover, it provides an overview of the procedure in the production line. However, most employees could not understand and could not operate the machine without on-the-job training. On-the-job training is more flexible and provides learning by doing for new employees, as OW1 explained.

> The training for the production department is the most important for firm performance because we are a manufacturer. Production is the heart of our business. If the quality of the finished product can't meet the customers' requirements, we would not be able to run the business. First of all, an overview of production will be presented for new employees. A brief history of the company, its vision, mission, the goal of the production department, the production process and the procedures of tasks will be introduced to the employees. Although we have a formal orientation, formal training, and a manual of procedures, it is still not enough. Most new employees require on-the-job training to make them understand clearly their tasks. Previously, our company had only on-the-job training, which could make them understand how to work on the production line, but the new employees have no idea about the effect of their work on other employees. After I established formal training, I found that the employees understood more about the production process, which made them have more responsibility in terms of doing a good

job for others and seeing other departments as collaborators rather than rivals. This reduced problems in the production process.

GM2 and OW5 also have professional training for their employees run by a third party,. They paid for professional training because they believe that it can enhance employee capability and the firm's image. It can be seen that both of interviewees are successors in firms and their age is below 40 years. OW5 also commented as follows.

> Formal training by professional speakers was more interesting for the employees. Moreover, it stimulated their motivation to work actively. The reason why training is important is that most senior employees tend to not share their knowledge and skills with the newcomers. Some junior employees left the firm because they felt uncomfortable with their senior worker and they could not develop themselves. Formal training not only can develop work skills but can also enhance the mentality of employees.

GM1, OW4, and OW6 confirmed that training is important, but indicated that formal training is not necessary. On-the-job training is enough for their employees, they feel, because this method is less time consuming and less money is spent, as OW6 explained below.

> I have about 70 employees and there are 40 employees in the production department. It could be good if I could have a formal training by specialists for my employees but I found that it wastes too much time and cost. Generally, the head of the department will have a short brief for new employees about their tasks. Then, they will learn by doing. The senior employees teach the newcomers and they practice together. It is very important to teach the necessary skills and knowledge for new people. It is impossible to have production skills without training. I am certain that the school and university would not have this kind of practice.

In summary, training on production capability has a positive effect on manufacturing SMEs' performance because each firm has different products and have

specific procedures to go through. If the employee does not understand the production procedure, it may highly impact the finished goods, delivery, and quality.

4.4.4.2 Training on Marketing Capability

Most interviewees regarded marketing as a sales-oriented perspective which focuses on persuading customers to buy their product. They emphasized sales value and total income rather than marketing strategy. Moreover, most of the manufacturing SMEs regarded the marketing regime as the capability of the entrepreneur rather than employees.

GM3, GM4, OW3, and OW6 stated that marketing capability is more complicated than production skills. Although employees understand marketing tools or have marketing knowledge, they cannot apply them to the real situation. Furthermore, a majority of interviewees found that a lot of employees that have graduated in the marketing field have no common sense in terms of dealing with customers. Therefore, it is not necessary to train employees in marketing skill. GM3 stated the following.

> No matter if you have a perfect marketing plan, it is useless if you cannot sell the products. Recently, I listened to a marketing plan issued by our marketing officer and I found that the plan was theoretically sound but it was not based on the nature the of business. Even if you have a good plan, it does not mean that you can sell. Sometimes, people just buy because of the relations between them and the salesman. Often, the junior marketing officer does not understand why some situations are not appropriate for some strategies and it is difficult to explain. Sometimes, the decisions on marketing strategies have to rely on common sense or your own experience. So, I think marketing capability does not depended on training.

OW2, OW3, and OW4 confirmed that the behavior of the customer does not require the employee to have good sales and marketing skills because it is important for SMEs to maintain their selling channel so that the market channel will be protected. The power and skill of negotiation should belong to the owners rather than the employee. OW2, OW3, and OW4 agreed to not enhance the capability of the employee in the sales department because the owners just need employees that obey

orders. Some of them experienced training and exchanged knowledge with employees and finally they lost customers to talented employees after they left the firms, as OW2 discussed in the following.

> I had a bad experience about training on employee in a sales and marketing session. He was my assistant in sales and marketing activities. I thought that he had potential and could help me a lot in the future. So, I supported him to study sales and marketing techniques by enrolling in a marketing course at a well-known university. At the same time, he got a lot of opportunities to learn about my business. I spent two years teaching him how to deal with customers as well. At last, he resigned because the competitor paid him double. The worst thing was that some of my customers became the customers of my competitors. For this reason I do not waste my time and money on this kind of situation any more.

GM2 and GM3, whose firms are already well-known in their industry, explained that price is the most important element in getting an order. Their customers just select the manufactures that offer the lowest price. Therefore, it is better to spend their attention on the production side to be more effective and to reduce production cost in the long term. Additionally, most customers want to negotiate with the entrepreneur directly because they know that the employee cannot make a decision when they want to negotiate about price, as GM 3 revealed in the following.

> In the current situation, price is very important because the trend of cost cutting has been popular during the economic recession. Therefore, cost reduction is more important than enhancing the capability of sales and marketing of employees. Mostly, my employees work in routine tasks that are not complicated, but all decision-making about discounts will be done by me. Therefore, general knowledge about sales and marketing and the skills of working on documents are enough for the employees in this department. Moreover, most customers ask to negotiate with top management. So, it is not necessary for me to establish training.

Additionally, the recruiting of marketing employees that have marketing or negotiating skills is easier than recruiting employees for the production section. There are a lot of graduated people that are willing to work as sales and marketing officers. Moreover, sales persons will be eager to increase the sales value if they think that they are going to receive a reward, as OW5 argued.

> The training in sales and marketing is not effect directly in terms of sales value but it increases the firm's reputation and image building. The employees feel that the firm that has formal training has a high stability and does not ignore the importance of employees. I think the best way to increase income is not about the training but it is about how to persuade strong sales persons from competitors to work with us and how to stimulate sales persons to increase their sales value. I have found that the easiest way to increase sales value is to provide rewards when they achieve the sales target, for example, incentives, overseas travel trips, and commissions and bonuses. Sometimes, we recruit a qualified sales and marketing person from a head hunter company but we have to pay enough salary, commission, and compensate them.

Moreover, OW2 used social media on the Internet as a marketing tool instead of hiring employees for marketing positions. Their employee in the sales and marketing department mostly work as administrative officers. GM4 stated that the main problem of her firms is in the production section. Often, the production department cannot meet the demands of customers. She has struggled with delayed production, defective goods, and could not receive more orders from customers. Thus, the development of marketing skills for employees was not her concern.

Therefore, there are several reasons why marketing training and firm performance have no relation:

Even if employees are trained, they cannot apply the training to the real situation.

Customers prefer to deal directly with the entrepreneur because they can negotiate for the best condition.

Entrepreneurs should protect their selling channel and not develop their employees to be substitutes.

A variety of marketing tools is available online

The lowest price is important, and therefore cost reduction is the first priority.

The production section is still not ready for expanding sales targets.

There are other tools that can stimulate the work performance of the sales and marketing department, for example, commissions and bonuses.

4.4.5 Employee Retention

All of the interviewees stated that it is very important to keep employees as long as possible because it is difficult for SMEs to recruit new employees that can completely substitute the previous ones within a short period. GM2, whose company is medium size, argued the following.

> We spent more than four months training a new employee to be able to do routine jobs. Additionally, we spent more than three months recruiting a new employee to substitute the previous one. In the worst case, I spent more than 1 year to recruit a mechanic for the production department. Some workers passed the interviews and worked only a few days before leaving. They tend to leave firms very easily while entrepreneurs lost time and cost for the recruiting and training process. Nonetheless, I have faced problems about the attitudes of the younger generation workers that have no loyalty.

OW2, OW3, and OW6 explained that they want to expand the business but they have not been able to find a new craftsman. Therefore, they have to retain the current craftsman as long as possible. OW6 further explained in the following.

> I am worried that my craftsmen are old and I have not been able to find new ones yet. Therefore, I have planned to outsource in order to have her products made in other countries to survive in the future. I understood that it is impossible to train a new craftsman because newly-graduated Thai people do not intend to be craftsmen. I have tried to train employees from Myanmar, Laos and Cambodia that are willing to be craftsmen but I have found that their

skills are not as good as those of Thai employees although we put a lot of effort into the training.

Furthermore, GM1, whose company is small, understands that it is difficult to attract new employees and to maintain existing ones, as she expressed in the following.

> Nowadays, it is difficult to find a new employee that is willing to work with a small company. I have suffered from trying to recruit new employees that can work hard and be patient. To me, a graduation certificate is not as important as the person's attitudes toward working. I am willing to educate and teach my employees if they are willing to learn. However, I have to spend more than six months to train one worker to be able to work well. Therefore, we try to maintain our workers as long as possible. Moreover, we have suffered from well-trained employees resigning because other firms could offer a better position or a better salary. Although we know the reasons for their leaving, we could not provide a better salary because cost control is also important. Nonetheless, the organizational structure is small and there is no chance to be promoted to a better position.

GM 2, GM4, and OW1 commented that the generation gap can be the problem for both the managerial level and the operation level. The difference in the attitudes between the firm's founder and the firm's successor can create confusion for the employee and lead to an uncomfortable environment in the firm. GM 4 and OW 1 have experienced the retirement of senior employees because of the different working styles and attitudes. They admitted that the retirement of senior workers in the production department caused problems with productivity. Additionally, they found that some senior workers did not want to share their skills or knowledge with the new employees. Some senior chiefs also did not want to assign their work to new employees because they were afraid of losing their power and position in the firm. Therefore, some new employees decided to leave because they could not learn and felt uncomfortable with the firm's atmosphere, as OW 5 indicated in the following.

> I have put a lot of effort into negotiating about management style with the founding generation but it has not been successful yet. I have insisted that the

> firm's performance could be better if we could establish a human resource department to ensure that our employees have clear job descriptions, performance indicators, and career paths. Some of the new employees need to know whether they have the opportunity to grow or not. Moreover, they want to know how we arrive at the salary and bonuses. However, my parents, who work as my consultants, have not agreed with me because they regard these items as expenditure and could be a channel for employees to request more welfare.

In conclusion, employee retention is important because it is time- and cost-consuming for training new workers in the production section. Moreover, it is difficult to recruit new skilled laborers.

4.4.5 Managerial Capability

All of the interviewees agreed that the managerial capability of the entrepreneur affects firm performance. However, they interpreted the meaning of managerial capability in a different way. Moreover, the method of learning to manage is also differently viewed.

GM1, GM3, OW2, OW4, and OW6 revealed that it is difficult for them to manage and operate their firms without business managerial capability because these skill and knowledge make entrepreneurs make better decisions, which can make the firm survive in the market. However, they believe that the increase in managerial capability depends on the person's experience because study in the educational system is just a framework. GM1 and OW6, who have overwhelming experience, argued that experience by doing is much more important than formal study in the class, as OW4 stated.

> My decision-making on management issues is based on my experience through trial and error many times. Therefore, I believe that the best way to learn is through practice. Sometimes, I have an argument with my daughter, who studied business management, because she feels that what I do is completely different from what she studied. I agreed that her concept was interesting and sounded good but it might not fit the situation sometimes

> because of nature of humans is different. Some of the marketing strategies that she proposed were not appropriate for SMEs because it requires the spending of a lot of money. Therefore, it is important to work with the real situation in order to increase managerial capability.

On the other hand, GM4, OW1, OW2, OW3, and OW5 revealed that they studied business management and it was a kind of short-cut to understanding the whole picture of the firm's management, which could help them solve internal problems and plan strategies for their enterprise. OW1 expressed the following in this connection.

> I would have no idea about managing my company if I did not have managerial capability. I have been able to develop my company because of the knowledge I gained at university. Moreover, I have had a chance to develop my skills by managing the marketing department by myself. I am lucky that my parents allowed me to establish a marketing department. Previously, we had only a production department and accounting department, and then my father was the only person who worked as a salesman. My business grew because we have more active marketing activity compared to our competitors.

Furthermore, OW2 took a special class on marketing management and digital marketing and found that it yielded a lot of benefits in terms of cost cutting on employment. He does not have a marketing department but has used Facebook as a marketing tool. Moreover, OW1 and OW5 confirmed that the knowledge of financial and accounting management is difficult to understand and it is costly to hire financial and accounting consultants. They do not want to hire professional accountants and disclose their accounting numbers to their employees and third parties. Therefore, they have to take financial and accounting courses to ensure that they can understand their business and manage the department by themselves.

It is obvious that the younger entrepreneurs are interested in studying and gaining more knowledge and skills through formal training because they believe that it can enhance their capability. GM2 felt that formal study of financial and accounting

management provides better understanding, but the study of marketing is difficult to integrate and adjust to his industry. Additionally, GM4, OW2, and OW3 commented that it is not difficult to find formal training for marketing, accounting, and financial capability but it is difficult to find consulting agencies that deal with the specific knowledge in their industry. They have an idea to develop the product but they could not find the consultants to suggest how to improve. OW2 expressed the following:

> I know the weakness of my business but I have no solution because it is very difficult to find a new reliable supplier or network. I always have new ideas about launching new products but my employees cannot meet my requirements. I do not want to hire other suppliers to make my products because I am afraid that they will steal my ideas. Therefore, I have tried to find an institution that can train my employees to be more skillful but I have not been able to find one.

In summary, the entrepreneur's knowledge is important because it allows him or her to manage the firm, launch market strategies, and control finances and accounting. However, the entrepreneur should have a skill to apply the knowledge to the business as well. Older entrepreneurs emphasized experience with management, but younger entrepreneurs tend to prefer access to knowledge sources, especially specific knowledge regarding their industries.

4.4.6 Financial Support

According to the interviewees, there are only two categories of financial support. One is supporting funds from the government and the other one is low-interest loans from commercial banks. However, only one interviewee (OW1) knew that the government provides support in terms of funds for manufacturing SMEs. The others had the perception that there were only low interest loans from commercial banks.

OW3, OW4, and OW6 explained that they established their company with personal funds. OW4 and OW6 started the business after being an employee more than 10 years in a company in the same industry. They began their business after they were confident that they had their own customers and some relations with suppliers.

OW3 started their business with ideas and specific knowledge about product design. They could design the products by themselves and outsource the manufacturing to produce their products. After they had enough customers and sales value, they began to hire employees and operate the production section.

GM2 and OW5, who are successors of firms, commented that fund support can be one of the management costs. Although they have the potential to be granted low-interest loans, they are concerned that if the investment costs exceed the firm's profitability, they also cannot survive in the market. Business expansion is not just about receiving money, but they have to be concerned about financial management, as GM2 explained.

> Currently, there are a lot of commercial banks that offer soft loans to us. However, it is important to balance debt and revenue. Even if we need a new machine, we cannot just get a loan from a bank and buy it. We have to calculate the breakeven point to make sure that it will not be just sunk cost. During the last couple of years, we took out a loan to expand the factory. Then, we tightened other expenditures to make sure that our debt would not exceed the revenue. It was not easy and it is very tough management when we have a big loan.

In contrast, GM3 argued as follows.

> Normally, commercial bank will not give a big loan to a small company without enough financial collateral. It is not easy for a small firm to get a soft loan; therefore, I have spent a lot of time preparing financial documents to persuade the bank to trust me. However, I admit that big loans can be a financial risk if it they are overdue because the cash flow is not enough to run the business in sometimes. Often, my enterprise also suffers from interest overdue loans because I borrowed too much.

OW1, who is eager to develop her business, succeeded in finding free funds from government support for SMEs. However, she demonstrated that it was difficult to access and coordinate with government agencies. The document preparation was too much and there was too much red tape for granting the funds. She wondered

whether next time she would make an attempt to apply for funds from a governmental agency or not. Moreover, she was certain that this procedure was too complicated for entrepreneurs of SMEs in rural areas and entrepreneurs that have a low educational background.

In conclusion, accessing financial support is not only an advantage but can also be a disadvantage in terms of firm performance. Most successful entrepreneurs borrowed money and spent it carefully. If they have no specific objectives which could increase sales values, they will not loan. Moreover, financial support such as low interest loans could be a financial risk if they are not well managed.

CHAPTER 5

CONCLUSION, DISCUSSION, AND RECOMMENDATIONS

The objective of this research was to investigate the factors affecting the performance of manufacturing SMEs in Thailand and to understand the reasons why these factors have an influence on performance. The study began with the quantitative method, multiple linear regression, to identify the factors influencing manufacturing SME performance. Moreover, each independent variable was analyzed in the second phase in order to understand the reasons why it had positive relations, negative relations, and no relation with the dependent variable. The information in second phase was gathered using in-depth interviews from experienced interviewees. In this chapter, the findings from chapter four are summarized and discussed in order to make recommendations for enhancing the performance of manufacturing SMEs in Thailand.

5.1 Conclusions Regarding the Factors Affecting Manufacturing SMEs in Thailand

To find the factors affecting the performance of manufacturing SMEs in Thailand, this research used multiple linear regressions along with revenue as the dependent variable, and it was concluded that there were four factors—firm size, training on production capability, employee retention, and managerial capability that affected the performance of manufacturing SMEs in Thailand. Firm size, production capability training, and employee retention were highly relevant at a p-value lower than 0.01, while managerial capability was seen to be related to the dependent variables with a p-value lower than 0.05. Additionally, the results from the semi-structured interviews confirmed that the results of the multiple linear regressions were in the same direction.

5.1.1 Performance Indicators for Manufacturing SMEs in Thailand

This research used revenue as the performance indicator in the multiple linear regression model. However, the researcher also further explored the performance indicators of the manufacturing SMEs in Thailand. The researcher also inquired concerning the indicators of firm performance, where are widely used by entrepreneurs during the qualitative methodology phase. The results of the qualitative method showed that most entrepreneurs regarded revenue as the most significant performance indicator because it is easy to record and compare with that of competitors. Profits were also regarded as an important indicator but did not reflect investment status. A low profit may occur from investment for future growth. Moreover, if some manufactures waited for orders with a high profit, they might not have a chance to get the order. However, the manufacturing firms that have unique products could prioritize profit.

5.1.2 Factors Affecting the Performance of Manufacturing SMEs in Thailand

5.1.2.1 Firm Size

The findings showed that larger firm size had a positive relationship with the revenue of manufacturing SMEs in Thailand. Traditionlly, European reseach papers have indicaged that larger firm size has a negative effect on firm performance (Evans, 1987; Hall, 1987; Dunne & Hughes, 1994; Das, 1995; Hart & Oulton, 1996; Sutton, 1997; Botazzi & Secchi, 2003). Moreover, some reseachers have found that there is no relationship between size and performance (Gonzalez & Correra, 1998; Monte & Papagni, 2003; & Audretsch et al., 2004). However, extended study on developing countries has found that bigger firms size exhibit better performance compared to smaller firms (Sutton, 1997; Yang, 2006; Mini & Rodriguez, 2000; Park et al., 2009; Tran et al., 2008; Dilani et al., 2007). It is noticeable that larger firms in less-developed countries exhibit better performance because they have to rely on human resources to produce products. Additionally, the results from multiple regression from the previous chapter revealed that larger firms have a positive relationship with sales in manufacturing SMEs. The p-value had the most significant value below 0.0001.

The results from the qualitative method confirmed that the bigger firms showed better firm performance. There are several reasons why this is so. First, most manufacturing SMEs in Thailand are still labor-intensive manufactures. Some industries rely on human resources to produce handicraft products, such as wood furniture and accessories, and most manufactures have semi-automatic machines that need humans to operate in some procedures. Therefore, larger employee numbers can reduce risk of manpower shortage. Most manufacturing SMEs struggle with manpower substitution when employees have urgent leaves or long leaves. Secondly, some manufacturing SMEs never have enough employees in the production section because of the high rate of turnovers. Lastly, it is difficult for manufacturing SMEs to expand their manpower because of the difficulty in recruiting qualified workers, and training new employees to be skillful workers. Newly-graduated people are concerned that smaller firms are less attractive than larger firms.

5.1.2.2 Training in Production Capability

The results of the multiple linear regression demonstrated that training in production capability has a positive relationship with the revenue of manufacturing SMEs in Thailand. Most researchers have confirmed that training has a positive effect on SME performance because it can increase the work performance of employees (Bin et al., 2015). Therefore, labor efficiency has a positive relationship with firm performance (Turcuț, 2016; Barringer et al., 2005). According to the literature, the resource-based view has increased the focus on human resource management (HRM), especially regarding the strategic role of training (Martinez-Costa, 2009; Sheehan, 2013). Although training is important as a building capacity method for employees, it is argued that formal training in SMEs may cause some constraints. Therefore, it is important to identify the training that is suitable for manufacturing SMEs. The results of the regression model mentioned in previous chapter then confirmed that formal training in production capability has a positive relationship with sales in manufacturing SMEs. The p-value was highly significant at 0.0002, which was below the significant p-value at 0.01.

Training in production capability has a highly-positive relationship with the revenue of manufacturing SMEs. The reasons are that production training is

required for every new employee in order to be certain that he or she understands the production procedure. Although the person might have experience in this career path or study in a related field in school or university, entrepreneurs have to set up training in order to enhance his or her abilities to be suitable for the production procedures. The production procedure in each firm is different and the product details are different. Additionally, formal training activities by professionals in related fields can motivate the work performance of employees and improve their attitudes toward the firm because they will feel that they can increase their potential.

5.1.2.3 Employment Retention

The quantitative and qualitative results concluded that employment retention has a positive relationship with the revenue of manufacturing SMEs in Thailand. Managing for employment retention is one of the management methods for maintaining employees in firms for a maximum period of time (ALDamoe et al., 2012; James & Mathew 2012). However, it is surprising that the working years of employees in one firm were less 1 year. Based on the data retrieved from the OSMEP survey, the average working years of employees in manufacturing SMEs in the east, northeast, and Bangkok was 0.14, 0.15, and 0.24 respectively. In other words, the average employee working years in one firm was less than two months in these regions. The southern, central, and northern regions performed better at 0.8,0.67, and 0.7 respectively. It can be said that the average employee retention in the manufacturing firms in these regions is greater than seven months. Moreover, the quantitative method concluded that employment retention had a highly positive relationship with the sales in the manufacturing SMEs with p-value <0.01.

Employee retention in manufacturing SMEs is very important because it is difficult to find the substitute worker. Moreover, training one employee to be able to work efficiency is time- and money-consuming. Entrepreneurs spent time and money on building the capacity of their employees; therefore, they would like to maintain them as long as possible. Normally, the loss of highly-skilled employees could increase the potential of competitors because these skilled employees tend to work in the same business. Additionally, it is difficult for manufacturers to recruit new employees, especially in the production department. Their firms are less attractive than large firms for college graduates. Furthermore, mechanics, technicians,

and craftsmen are less available in the job market because the education system seems to focus on general education rather than vocational education in each field. Moreover, young-generation workers prefer to work in offices were a good environment and work-life balance are provided.

HRM practices play an important role in improving productivity, performance, and the survival of the firm. Human resource management enables the organization to attract, retain, and motivate employees to support the mission, objectives, and organizational strategies toward the enhancement of organizational performance (Zakaria, 2012). Delaney & Huselid (1996) explained that the impact of HRM practices on the organization's performance depends on the employees' skills, abilities, and motivation, and the organizational structure. However, the majority of studies have revealed that one of the keys to the business failure of SMEs is their having less emphasis on human resources (Baron, 2003). Moreover, Huang and Brown (1999) found that human resource management is the second problem of SMEs, following only marketing strategies. Ismail (2009) confirmed that competitiveness is strongly linked to human resource capabilities because human resources can be key ingredients affecting organizational performance.

5.1.2.4 Managerial Capability

The present study found that low managerial capability has a negative relationship with the revenue of manufacturing SMEs in Thailand. One study on SMEs in northeastern Thailand found that one of the problems was a lack of business knowledge on the part of entrepreneurs. Most of entrepreneurs manage their business according to their own experience, and therefore they are not competitive because of lack knowledge on management, organizational development, marketing, and so on (Promsaka Na Sakolnakorn, 2010). Moreover, Chanvarasuth (2010) found that many Thai SMEs lack knowledge of technology. They are concerned about the cost of adopting e-business rather than realizing the benefits to be obtained. Therefore, most of them have poor business management skills and lack perspectives on the firm's business direction. The OECD (1996) suggested that knowledge and advice should be provided to the owner/manager of SMEs because they are highly related to the competitiveness of SMEs.

In this research the statistical data confirmed the hypothesis that low managerial capability has a negative relationship with the sales of manufacturing SMEs as accepted. The p-value was significant at 0.016, which was below the significant p-value at 0.05. Some entrepreneurs began their business by using their experience and connections; however, most of them lack managerial skills. This limitation could be an obstacle to their developing their business. Most entrepreneurs agreed that managerial capability could lead them to establish the company's vision and mission in the short term and long term. Most decision-making stages were done by the owners; therefore, the potential and knowledge of the owners have a high impact on firm directions. One of the approaches that is associated with SME performance is the entrepreneurial orientation, composed of the process, practice, and decision-making that enhance the business performance and competitive advantage (Millar, 1983; Gray, 1998). Moreover, some researchers found that firm performance has a positive relationship with entrepreneurial orientation (Sinkula, 1994; Wiklund, 1999). Nevertheless, young entrepreneurs tend to be interested in training and joining capacity-building workshops for SMEs. Most entrepreneurs agreed that general skills and firm-specific skills can be acquired from experience and formal training. However, it is difficult to develop industry-specific skills because it is difficult to find an education source.

5.1.3 Other Factors

There are three factors—firm age, training on marketing capability, and financial support—that were seen to have no relationship with the revenue of manufacturing SMEs in Thailand, and this paper scrutinized the reason why and how these factors affected or did not affect firm performance by using the qualitative method.

5.1.3.1 Firm Age

Firm age was seen to have no relationship with the revenue of manufacturing SMEs in Thailand. Years of the existence of the firm did not affect firm performance directly. Firm age is one of the interesing factors that have been debated by numerous scholars, and some researchers have found that the younger firms have better performance than older firms because of motivation, innovation and

flexibility (Fizaine, 1968; Kirpalani & Mcintosh, 1980; Jovanovich, 1982; Evans, 1987; Variyam; Kraybill, 1992; Lumpkin & Dess, 1996; Liu et al., 1999; Shane & Venkataraman, 2000). However, some that espouse the resource-based view have argued that older firms have experience, competency, and fewer limited resources (Sharfman et al., 1988; Bloodgood et al., 1996; Autio et al, 2000; Andersson et al., 2004; George, 2005). However, the results from chapter four also confirmed that there was no significant relationship between firm age and performance. Some studies of manufacturing SMEs also found that there was no relation between firm age and performance (Lundvall & Battese, 2000; Dilani et al., 2007; Tran et al. 2008) .

Older firms would have an advantage if they had better resources such as skilled labor, experience, funds, and loyal customers. However, age could be a constraint if firms lacked skilled manpower, knowledge of management, cash flow, and customers. Therefore, the performance of the firm is related to firm resources rather than years of existence. Additionally, the business cycle and economic situation in each industry are different. In some industries, it is difficult for younger firms to perform well because of downturns in the industry and the customers tend to be confident in the firm that has project references. However, the younger firm may gain some advantages if the business cycle in their industry is in an upturn and can be connected with the digital market. Therefore, it cannot be concludes that the age of the firm affects manufacturing SMEs' performance.

5.1.3.2 Training in Marketing Capability

Training in marketing capability was seen to have no relationship with the revenue of the manufacturing SMEs in Thailand. Most interviewees focused on the sales-oriented marketing perspective and emphasized sales value and income. Selling activity was the first priority while other marketing activities were not regarded as significant.

They believed that the sales and marketing skill depends on the employee's personality rather than training. The interviewees agreed that training cannot change the character of the employees. Moreover, it is not necessary to enhance the marketing capability of employees because some customers are willing to deal with entrepreneurs of the SME directly. Further, some entrepreneurs would like to protect their negotiation power and be the sole person of the firm to negotiate. In

order to stimulate the work performance in the sales and marketing department, compensation and rewards are the key motivation rather than training to build capacity.

Moreover, there is a variety of marketing tools available online, and employees in the sales and marketing department are not required in some manufacturing SMEs because the entrepreneur can do the job by him/herself. Nonetheless, for some industries the lowest pricing strategy is the most important thing, and thus they focus on how to reduce costs instead of training in the marketing section. Moreover, some manufacturing SMEs revealed that it is difficult to receive more sales orders because they cannot expand the capacity of the production plant or manpower.

5.1.3.3 Accessing Financial Support

Accessing financial support was considered to be one of the obstacles for SMEs mentioned in research papers. A lot of researchers found that accessibility of funds influenced firm performance (Kira & He, 2012; Cooley & Quadrini, 2001; Cabral & Mata, 2003; Beck et al., 2008; Veselinova & Samonikov, 2012; Kira & He, 2012; Cooley & Quadrini, 2001; Cabral & Mata, 2003). However, the results of the multiple linear regression model demonstrated that support in terms of funds had no relationship with the revenue of manufacturing SMEs.

Most interviewees regarded financial support as soft loans from banks and therefore financial support could be a disadvantage if the entrepreneur did not understand well the market situation. Successful entrepreneurs tend to raise funds with care in order to ensure that the investment is worthwhile. Even low-interest loans can cause overwhelming debt if they are not balances with revenue. The OSMEP (2016) also indicated that a reason why SMEs cannot access funds support is that they lack financial collateral, formal accounting and finance, and have no financial history. Therefore, from this point of view financial management knowledge is much more important than funds. If funds are granted to manufacturing SMEs without good management, it is high possible that the funds will be spent on the wrong objectives. Therefore, financial institutions should beware of offering funds to SMEs. Additionally, there are two other reasons why the funds could not be granted to SMEs. One reason is that financial institution regulations are not flexible for SMEs. Another reason is that financial consultations are regarded as high-cost activities.

Currently, low-interest loans are available for SMEs because commercial banks regarded SMEs as potential customers. Moreover, the main purpose of SMEs bank is to supporting SMEs. However, SMEs lack appropriate financial collateral, formal financial statements, and other supporting documents for bank requirements. A majority of SMEs have informal accounting and financial records because they are not complex and are low cost. Some entrepreneurs are reluctant to employ formal accounting management because they lack knowledge of accounting management and professional accountants have a high salary. Additionally, some entrepreneurs do not want to disclose their accounting status because they want absolute control and ultimate decision-making in the firm. However, financial and accounting management provides the financial status of the enterprise for entrepreneurs and consequently the entrepreneur will understand his or her financial situation and be able to identify the problems with cost control in each section. Additionally, formal accounting and financing records can be documentary support for firms to acquire the low-interest loans from commercial bank and funders.

5.2 Discussion

The number of employees, employee retention, training on production capability, and the managerial capability of entrepreneurs are the factors that affect the performance of manufacturing SMEs. It can be seen that the factors that significantly affected manufacturing SMEs are related to human resources. Currently, there are a lot of external factors that can enhance the competitive advantage of these enterprises; for example, technology, the Internet, and globalization. However, the findings revealed that the development of human resources in Thailand should be the first priority before developing other platforms for manufacturing SMEs and hence the findings are further discussed as follows.

The success of the small business is often related to the employees, who have the, knowledge, and skills to enhance the capacity of the business and to retain the firm's competitiveness (Barrett & Mayson, 2005; Way, 2002). Haar and White (2013) proposed that the resource-based view highlights the idea that firms should invest in the internal development of various resources that differentiate the firm from its firm

competitor to achieve an advantage. Therefore, the firms that have a larger number of employees have an advantage because they have better opportunity to increase their production capacity and provide better product quality. Nowadays, most manufacturing SMEs have problems with recruiting because they are less attractive compared to larger firms and the skilled labor in the job market is not sufficient for the manufacturing sector.

In order to maintain a competitive advantage, firm size in terms of employees should not be too small because most manufacturing SMEs in Thailand rely on manpower rather than machines, and production capacity is essential for increasing sales value. The growth of firm income affects the organization's structure. If the firms have a small structure, talented employees seem to move to competitor firms and job seekers will not be interested in unstable and insecure firms. On the other hand, the larger firms have a better opportunity to retain experienced workers and to recruit new qualified workers for the firms. Therefore, larger firms tend to gain an advantage in the market and perform better. Although cost control is important for SMEs that have limited resources, the concerns of business plans to increase revenue and profit growth should not be neglected. If the firms lose their skilled workers and cannot replace them with new workers, their production capacity will decrease and then their market share will be lost.

Although the entrepreneurs of manufacturing SMEs explained that the skilled laborers were not sufficient in number for the manufacturing sector, the Thailand Development Research Institute (TDRI) reported that the unemployment rate in Thailand achieved 1.2 percent or approximately 400,000 unemployed people in the first quarter of 2017. The unemployment rate increased from the first quarter of 2016 to around 99,000 people. It is obvious that the labor market in Thailand has enough laborers in terms of quantity but the quality must be improved. The Director of the Labor Development Program of the TDRI, Dr. Yongyuth Chalamwong, stated that the quality of labor is not matched with the demand of the labor market because the demand for skilled labor has changed. Currently, the number of laborers working in science, technology, engineering, and math (STEM) has seen a slow growth rate because the private sector has not been interested in investment in STEM labor training. Therefore, it is important for the government to reinforce the training of

laborers so that the workforce can be competitive, productive and innovative (Aroonkriengkrai, 2017).

Consequently, manufacturing SMEs lack technicians in mechatronics and technology, although the unemployment rate has increased. Sanguanserivanich (2017) reported that 75 percent of SMEs are between industry 2.0 and industry 3.0, which rely on semiautomatic machines and conveyor systems, while the policy of Thailand 4.0 has aimed at industry 4.0, which emphasizes automation and data exchange in manufacturing and innovation. Mr. Pat Jones, who is an expert in technical vocational education and training from the Chisholm Institute in Australia, has suggested that it is important to develop technicians that understand information technology (IT), cross-function knowledge, and have problem-solving and analytical skills in order to develop the manufacturing sector.

Additionally, the findings from this research confirmed that employee retention has a highly-positive relationship with the revenue of manufacturing SMEs in Thailand because the skills and knowledge of employees affect firm productivity. The concept of employee retention has been defined according to various perspectives. Mostly, employee retention is measured by employee turnover and employee attrition (Hausknecht et al., 2008; Kar et al., 2011). In SMEs, it is important to keep employees in the firm because if employees quit it may lead to a lack of resources. Wagar and Rondeau (2006) found that small firms tend to have difficulty finding suitable substitutions from both internal candidates and the labor market. It is surprising that it takes most employees more than six months to be able to work properly but the average period of employee retention in manufacturing SMEs in Thailand is less than one year. Gialuisi and Coetzer (2013) found that there are three main reasons why employees leave firms. First, internal conflict relations lead employees to become uncomfortable, insecure, and dissatisfied in working with their colleagues. Secondly, the informal working structure leads to work overload and stress because the employees may do too many jobs and have too many work hours. They risk burn out and seek new jobs that have a more formal structure and specific job descriptions. Lastly, small firms lack career progression opportunities because there are no avenues for promotion. Therefore, the employees that want to grow and be promoted have no opportunity in small firms, so they have to leave for a better

salary and better career path. Although the majority of entrepreneurs and mangers know that their firms are less attractive than larger firms, it is difficult for them to solve these problems. Therefore, it is important for firms to not only survive but also to grow their business in order to maintain the advantage of remaining good quality for employees.

The influence of training on SMEs' performance has been widely debated and the results have been inconclusive. Some literature has confirmed that there is a relationship between training and firm performance. However, several academic reviews have found a positive relationship between firm performance and training because it can enhance the firm's expansion, the firm's profit, the firm's productivity, and firm competitiveness (Dilani. et al, 2007). Moreover, government investment in training for SMEs significantly increases employment opportunities and profit (Marshall et al.,1993). Although there is a great deal of evidence on how training affects firm performance, some academic papers have suggested that SME training lacks effective measurements (Hannon, 1999; Cushion, 1996; Kerr & McDougall, 1999). Additionally, Storey (1994) discovered that it is difficult to find a linkage between training and performance.

Therefore, this research divided training into two categories, marketing training and production training, in order to find the proper type of training. The findings confirmed that production training is important for firm performance while marketing training was seen to have no linkage. It is widely accepted that most SMEs have limitations of resources such as time and money. Therefore, they choose to invest in the most effective method and training in manufacturing sessions has been found to be much more important than training in marketing. The pattern of behavior of employees on the production line directly affects the finished product and the training results can be seen during the short term. Additionally, the multiple linear regression revealed that marketing training for employees had no significant relationship with firm performance and the findings from the in-depth interviews confirmed that owners and managers regarded marketing training as an unnecessary activity because most market activities are done by entrepreneurs. Moreover, the style of marketing management was seen to depend on the person's experience and

background rather than marketing training. In other words, production training can bring the firm benefits and improve its performance.

At the same time, marketing training do not seem to present results in short period and the benefits seem to belong to the employees rather than to the firm. The International Small Business Journal: Researching Entrepreneurship (2017) revealed that SMEs focus on firm benefits rather than employee benefits because they emphasize their own survivors. Moreover, entrepreneurs attempt to establish training as little as possible because it consumes time and money. Admiraal and Lockhorst (2009) and Bryan (2006) also explained that a high rate of turnover was the reason why training could be a waste if the employees leave the firm. In conclusion, manufacturing SMEs regard training as a tool to improve firm productivity and profit rather than human capital. Therefore, training on production was seen to be an important activity to survive in the market while market training was considered unnecessary.

Nonetheless, managerial capability, which is a factor related to entrepreneurs, has an impact on firm performance. The knowledge of management and business for entrepreneurs is important for driving the firm to reach a satisfactory performance. Although the multiple linear regression model revealed that funds support and marketing training did not directly affect firm performance, the in-depth interviews reflected that the practices and decision-making of entrepreneurs are highly related to marketing and the financial management knowledge of the entrepreneur. Most market strategies of SMEs are carried out by owners, and therefore training on marketing for employees is not significant. Moreover, the majority of decision-making in relation to financial management is solely carried out by owners. If the entrepreneur or manager does not have sufficient experience, skills, or knowledge of financial management, funds support can be a sunk cost instead of an advantage. Numerous academic researchers have argued that an essential factor in high performance is entrepreneurship or entrepreneurial behavior. Entrepreneurial firms exhibit various behaviors depending on the type of firms and the specialist field of the entrepreneur (Pett & Wolff, 2016). Covin and Slevin (1989) and Miller (1983) constructed three dimensions of entrepreneurial orientation (EO): risk taking, innovation, and pro-activeness. A high level of EO allows firms to become first movers and allows them

to exploit advantages to have a positive impact on performance (Wiklund & Shepherd, 2005). However, in order to achieve these three dimensions, the entrepreneur should have enough knowledge and experience in market and business management. Thus, managerial capability is a significant factor for firm performance. Pharice and Stoica (2015) found that knowledge resources are a significant variable because they allow SMEs to forecast the market situation and to create an appropriate strategy. Therefore, both the entrepreneur's orientation and knowledge resources emphasize the ability to foresee emerging opportunities and to quickly respond to overcome the resource constraints of SMEs. Consequently, entrepreneurs should acquire knowledge of business management and market strategies in order to create appropriate business plans. However, the qualitative study in this paper pointed out that it is difficult for entrepreneurs to improve industry-specific skills because knowledge sources are insufficient.

The quality of human resources in Thailand reflects that the development of human resources has not been in the right path. The mismatch between education and the labor market have impacted human resources in manufacturing SMEs. Moreover, the specific knowledge in each industry is not easy to access. Therefore, it is difficult for manufacturing SMEs to develop their products and to innovate. The national education plan should focus on the demands of the labor market. Moreover, an industry knowledge hub should be established in order to facilitate the development of manufacturing SMEs in the future.

5.3 Limitations of Manufacturing SMEs in Thailand

Regarding the summary of the research results, there are at least three limitations for manufacturing SMEs in Thailand. Regarding the first, entrepreneurs struggle in terms of recruitment and retention. Second, manufacturing SMEs require graduates from vocational education schools rather than university graduates. Last, advisory institutions for each industry are not available. It is difficult for SMEs to find a supportive connection related to their products.

First, one of the reasons why most manufacturing SMEs suffer from recruitment and retention difficulties is that their attitudes towards human resource

management are not corrected. The majority of SMEs did not have a human resource department because entrepreneurs are concerned that it will cost money. The workforce in SMEs is not professionally managed. Moreover, entrepreneurs make decisions by themselves and do not have long-term plans for human resources. Most SMEs regard human resource management as an additional cost; however, it is very important to retain quality employees in the firm and the effectiveness of recruitment will reduce time and money for SMEs. Therefore, human resource management is beneficial for firms and firms should pay attention to human resource planning and recruitment and retain and reward employees. Moreover, the work environment should make employees feel comfortable and secure because internal conflicts and uncomfortable work conditions in firms may cause high turnover. Additionally, each employee should know about the possible career paths in the enterprise to ensure that they have an opportunity to grow and to be promoted in terms of both position and salary. Firms must provide training for employees in order to enhance their work efficiency and attitudes, and both formal and informal training should be of concern as tools for developing firm performance. Junior employees or newcomers need advice in order to improve their ability to work. Moreover, knowledge sharing between senior and junior employees can reduce the conflicts among employees. However, SMEs have limitations regarding investment and therefore entrepreneurs should ensure that the training programs can bring benefits to the firms. According to the findings, training related to manufacturing skills should be focused on rather than other skills because the quality workforce of manufacturing SMEs can create a competitive advantage for firms, for example, meeting delivery targets, product quality, and reducing defects.

Moreover, miscommunications among senior and young employees may cause younger employees to leave the firms. Nowadays, most manufacturing is challenged to develop new-generation workers to replace those that are retiring. Saru (2007) suggested that firms should develop communication with employee and create a firm culture in order to establish ongoing dialogue among employees. Moreover, the career paths and short-term and long-term goals for every single employee should be set. Additionally, the responsibility of the manager or experienced employees should be decentralized in the organization’s structure rather than relying on one person that is

skillful. Langwell and Heaton (2016) found that SMEs usually lack succession plans for each position. If experienced employees leave a firm, the firm may lack manpower to carry out routine work. The firm could help employees understand their role as successors to some position, and additionally, incentives should be analyzed by using performance indicators. Therefore, manufacturing SMEs should emphasize human resource management in order to reduce problems with employee turnover and recruitment.

Secondly, vocational education in Thailand is not well promoted although it is one of the fundamental infrastructures that the government should be concerned about. On 9 August 2017, Dr. Kobsak Phutrakul, Vice Minister for the Office of the Prime Minister, made a speech in the discourse about perspective on Thailand 4.0 and driven of Thai vocational labor that the demand of vocational graduated student was higher than the supply. In Thailand, there are around 20,000 positions per year that are still vacant, but the number of vocational laborers is still not sufficient. He explained that it cannot be denied that most parents do not support their children's study of vocational education because of its negative image and because of the supposed violence in the vocational schools. In 2017, a report of the Office of Vocational Education Commission revealed that vocational education has an insufficient number of teachers. The vocational system requires 33,243 teachers but there are only 15,206 positions available. Although the Office of Vocational Education Commission has requested adding more governmental officers at about 15,000 positions, it has allowed only 990 positions. In order to improve the capacity of SMEs, the attitudes toward vocational education should be changed.

Furthermore, niche products and the quality of goods could be the strength of manufacturing SMEs. Therefore, entrepreneurs require craftsmen, technicians, and individuals with professional skills as a middle- and high-level skilled labor force. Particularly, vocational workers are important for producing quality goods and for creating innovation. However, Thai people tend to value general education rather than vocational education because it seems to be regarded as lower education. As a result, the labor market has suffered from the scarcity of vocational labor. Additionally, vocational education has been neglected and has received limited attention by the government, and the government should set strategies to change the

perspective on vocational education in Thailand by promoting the value of professional skills and informing people about the income resulting from being a high-skilled worker. At the same time, the government should focus on developing vocational education programs by stimulating motivation for learning, with a concentration on practical tasks and concern about one's own career. Moreover, the government should provide sufficient information and career guidance for adolescents so that they can select their own career options. Nonetheless, there should be a sufficient number of teachers in the vocational school system to provide quality knowledge and experience for vocational students.

Lastly, manufacturing in Thailand lacks advisory networks for encouraging knowledge, and the skills of the workers in manufacturing SMEs in each industry should be promoted. Hughes et al. (2009) found that better-performing firms have an advisory network and they have various sources of knowledge. Therefore, academic institutes should understand the role of knowledge provision. It can be said that manufacturing SMEs rely on human capital together with knowledge, education, experience, and motivation. Therefore, advisory panels should be provided. Additionally, connections and networks could provide opportunities to distribute products, find business partners, obtain information, create innovation, and acquire technology and knowledge related to the industry. A majority of manufacturing SMEs are concerned about the connections among their enterprises, customers, and suppliers for commercial purposes. However, they seem to neglect the connection between their enterprise and public organizations because of the negative attitudes about the undeveloped management systems and the red tape of governmental organizations. Currently, government agencies have attempted to employ more active policies regarding SMEs. The OSMEP has established mentorship programs for SMEs, such as an SME One Stop Service Center, which provides consultants for developing products and services, technology and innovation, and market analysis and exports. Enterprises should realize that the linkage between manufacturing SMEs and the public sector would support them in terms of acquiring recommendations for improving their business, perceiving market and economic situations, and solving some of the problems that entrepreneurs cannot solve by themselves. Therefore, public and private networks could increase the entrepreneurial management level of

the entrepreneur. The ability to take risks, and to be innovative and pro-active, would occur together with the support of networks.

In 2015, the OSMEP reported that the proportion of SME GDP to total GDP was 39.5 percent, which was a large gap compared to high-income countries, where the average proportion of SME GDP to total GDP was 51 percent. Therefore, the fourth SME Master Plan (2017-2021) focused on the ease of doing business, smart SMEs, and high value start-ups in order to increase the proportion of SME GDP to total GDP to 50 percent within the year 2021. Ease of doing business aims at improving the services and regulations of governmental agencies in order to help SMEs run their business smoothly. Smart SMEs is the concept of developing SMEs to compete in the global market by providing management knowledge in an internationally context. High-value start-ups is the intention to support new entrepreneurs that can contribute to high value of revenue by using technology, creativity, and innovation to move Thailand to become an efficiency-driven and innovative economy. It can be seen that the fourth master plan emphasized increasing competitive advantage by pushing SMEs into the international market and promoting innovation and technology. However, the findings here indicate that the fundamental obstacles for manufacturing SMEs in Thailand are mostly related to human resources and knowledge resources. Innovation, technology, and the international market could be supporting factors for SMEs to be successful; however, a majority of them still lack quality manpower and sophisticated networks that could assist them in overcoming obstacle, such as lack of knowledge regarding financial and entrepreneurial management, the specific skills in each industry and lack of quality manpower.

5.4 Contribution to Theory

This study is mainly based on two essential organizational theories: population ecology and resource-based view. Further discussion of those theories is below.

5.4.1 Population Ecology

The concept of population ecology demonstrates that the ability of a firm increases with age because of more experience in coordinating, routine work, and learning. Moreover, the concept of structural inertia indicates that successful firms have more ability to learn from the environment and to adjust their structure to respond it.

In this study, population ecology seemed to not be able to explain the effect of firm age because age was not a significant factor that affected the performance of manufacturing SMEs in Thailand. It could not be concluded that older firms have more ability to learn and have better firm structure. Some older firms could lack the ability to adapt themselves to dynamic situations. However, the findings confirmed that the liability of smallness could be an obstacle for manufacturing SMEs. Population ecology indicates the effect of firm size on manufacturing SMEs in Thailand. The findings agreed that the smaller firms suffer from fund raising, qualified managerial employee recruiting, and the attraction of potential customers. It is true that they have a big disadvantage because of the limitation of resources.

5.4.2 Organization Resource Theory: Resource-based View

The resource-based view asserts that financial resources, physical capital resources, human capital resources, and organizational capital resources which belong to the firm could increase the firm's competitive advantage. Organizations that have valuable, rare, inimitable, and non-substitutable resources can gain superior performance. Therefore, human capital can be regarded as an important factor because it is inimitable and non-substitutable.

As a result of this study, using resource-based view in studying the factors affecting the performance of manufacturing SMEs in Thailand, it can be concluded that human capital is the most important in terms of increasing firm performance. Employee retention, training in production capability, and the managerial capability of entrepreneurs were seen to significantly affect firm performance because they are not easy to substitute. Most manufacturing SMEs in Thailand face problems with recruiting for substitution and spend time training new employees to be able to substitute previous workers. Moreover, the entrepreneurs that have high managerial capability and that are highly skilled cannot be regarded as an inimitable resource and

firms do not want to lose them their competitors. Their loss can increase the competitive advantage of competitors. In some industries, a highly-skilled laborer is the most valuable resource in the firm because he/she is a rare resource that cannot be replaced by machines. Those three factors confirm that inimitable and non-substitutable resources can enhance the performance of manufacturing SMEs in Thailand.

5.5 Recommendations Based on the Findings

Manufacturing SMEs in Thailand are one of the important sectors that bring revenue and employment to the country. However, Thailand is one of the countries that suffer from a middle income trap because Thailand still has not been successful in increasing the GDP proportion contributed by SMEs. Additionally, the experience of the economic crisis in 1997 is a lesson learned—that the national economy cannot rely mainly on large enterprises, multinational enterprises, or foreign direct investment. Consequently, Thailand set a target for the SME GDP proportion at 50 percent after the Second SME Master Plan in 2007; however, a summary of the third SME Master Plan in 2016 reported that the SME proportion was only 38.9 percent of total GDP. Therefore, this dissertation provides the following recommendations. The objective of this research was to identify and understand the factors affecting SME's performance in Thailand in order to contribute recommendations for governmental agencies to help manufacturing SMEs in Thailand improve their performance. Recommendations for the government to conquer some of the obstacles are as follows.

Table 5.1 Recommendations Based on Findings

Recommendations Based on Findings
Factor: Size (Number of Employees)
1. The Ministry of Education should have clear directions and plans to ensure that the education level and labor market are not mismatched.
2. The Ministry of Education should prioritize and support fields of study related to science, technology, engineering, and math in order to increase the STEM workforce.
Factor: Employee Retention
3) The OSMEP might provide training in human resource management for manufacturing SMEs to enhance their understanding.
4) Academic institutions should play the role of knowledge provider for the OSMEP and manufacturing SMEs.
Factor: Training on Production Capability
5) The Office of the Vocational Education Commission should have clear directions to prioritize the importance of mechanics, technicians, and craftsmen.
6) The Ministry of Industry should establish a specific-industry training center for manufacturing SMEs in each industry.
Factor: Managerial Capability of Entrepreneurs
7) The OSMEP might establish a network forum for entrepreneurs of manufacturing SMEs to provide networks and connections.
8) The OSMEP and academic institutions should established mentorship for developing the specific-industry skills for entrepreneurs.

These recommendations are aimed at increasing the performance of manufacturing SMEs in Thailand. It is not only an advantage for the government but also leads to benefits for individuals. The growth of SME revenue would provide better income for entrepreneurs and employees. Although the government has launched policy to build the capacity of SMEs, entrepreneurs should have an attitude to improve themselves as well. The findings presented that manufacturing SMEs lack

sufficient knowledge of their own industry and cannot find advisors. Therefore, academic institutions should be one of the key partners. The government should allocate supportive roles for universities and research institutions to assist in sharing knowledge, technology, innovation, and other resources continuously. The fourth SME master plan also mentioned clusters and business networks. The government established three main objectives; strengthening SME networks, supporting SMEs to be part of the large firm supply chain and strengthening agricultural cooperatives. In order to develop industrial SME clusters, the responsible governmental agencies should pay more attention to setting up SMEs clusters and establish action plans in the same direction. The government should also be concerned that the cluster is one of the instruments of knowledge diffusion that will lead to technological and innovative development. The clusters would be composed of the private sector, and government agencies and universities. At the same time, governmental agencies and academic institutes should understand the nature of Thai SMEs; that is, they are not willing to disclose information. As a consequence, the consulting agencies should assist SMEs in addressing these obstacles and make them confident that their information will not be revealed. Governmental agencies could employ information through their experiences and create action plans using a bottom-up procedure.

Nonetheless**,** policy implementation is one of the problems in Thailand. Although the policies and strategies related to developing SMEs are rich with good concepts, the process of converting policy into action seems to be difficult. Government organizations mostly struggle with bureaucratic structures, strict procedures, inflexible regulations, and inactive implementers. It is widely known that the achievement of SME policy requires numerous ingredients, such as human resources, financial resources, private sector involvement, and the municipality because the challenges of achieving goals depend on the process of planning, coordinating, communicating, and creating promotions. The communication between governmental organizations and private organizations is unavoidable; thus the coordinator should have high potential to establish the room for working together. Moreover, the implementers should be able to deal with the internal conflicts in their organization in order to conduct effective action. Another challenge that should be solved concerns the decision-making process, the impact of a large hierarchical system on time consumption, and delayed action. Therefore, the success of

implementation requires an appropriate administrative structure that can respond more quickly and flexibly because SMEs are related to the domestic and international economy, which is highly dynamic.

5.6 Implications for Further Study

This dissertation was of a mixed-method design; however, the data used was not specific for each industry. Therefore, this research provided an overview of the factors affecting manufacturing SMEs in Thailand.

As this dissertation focused on the broad picture of manufacturing SMEs in Thailand, further study should include study of the factors affecting manufacturing SMEs in each industry. The industrial context in each field may have both similarities and differences, and therefore further recommendations for each industry may yield benefits for enterprises and for the government.

Nonetheless, this research focused on internal factors, and further study should explore the external factors affecting the performance of manufacturing SMEs in Thailand; for example, study on SME policy implementation, laws related to SMEs, and sources of financing and the market situation in each industry.

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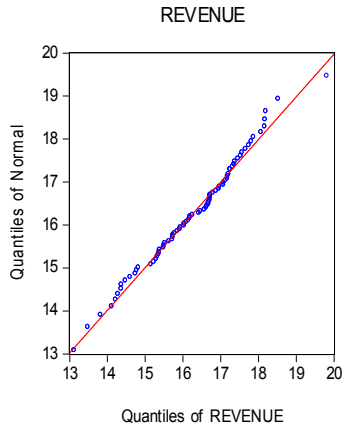
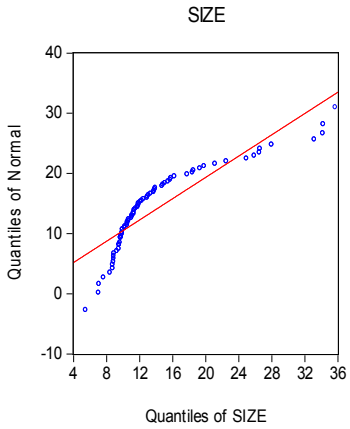
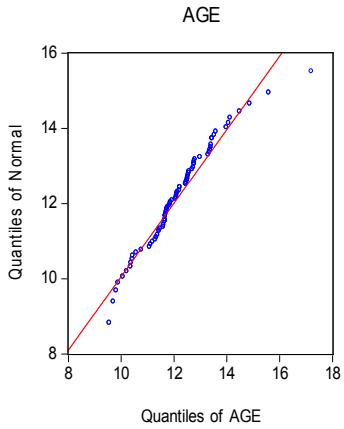
APPENDICES

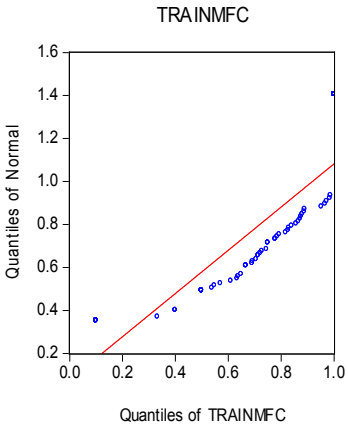
APPENDIX A

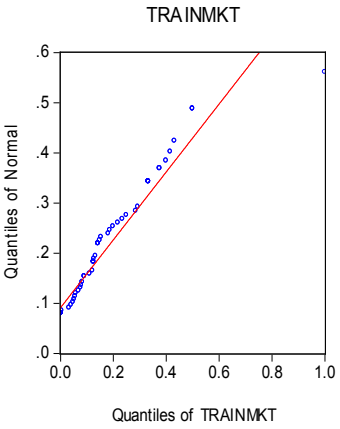
ILLUSTRATION OF Q-Q PLOTS

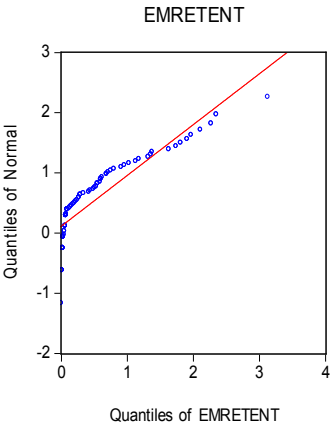


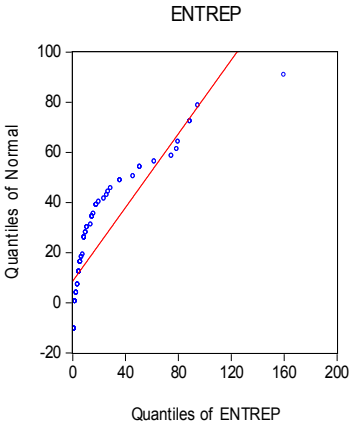


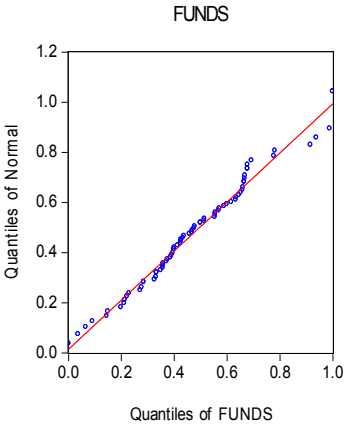






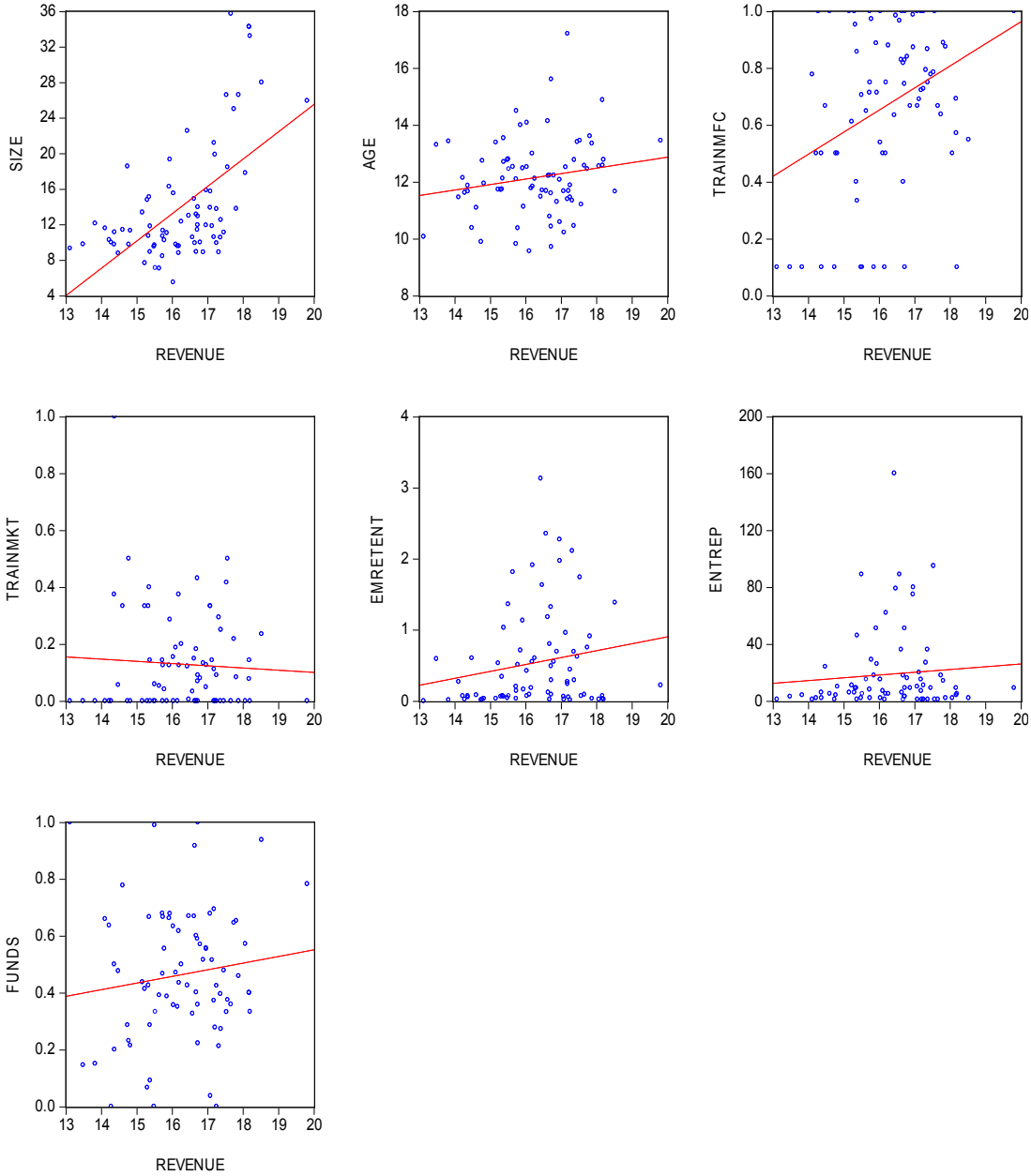






APPENDIX B

ILLUSTRATION OF SCATTER PLOT



APPENDIX C

RESULT OF HETEROSKEDASTICITY TEST: WHITE

Heteroskedasticity Test: White

F-statistic	1.173079	Prob. F(35,39)	0.3128
Obs*R-squared	38.46388	Prob. Chi-Square(35)	0.3155
Scaled explained SS	22.68287	Prob. Chi-Square(35)	0.9463

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Sample: 1 77

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.300778	7.354512	-0.992694	0.3270
SIZE^2	-0.003831	0.003342	-1.146447	0.2586
SIZE*AGE	0.021973	0.026861	0.818043	0.4183
SIZE*TRAINMFC	-0.043283	0.079567	-0.543987	0.5895
SIZE*TRAINMKT	-0.253188	0.205601	-1.231450	0.2255
SIZE*EMRETENT	-0.031576	0.112946	-0.279566	0.7813
SIZE*ENTREP	0.000873	0.002437	0.358151	0.7222
SIZE*FUNDS	0.149193	0.178515	0.835745	0.4084
SIZE	-0.163626	0.306445	-0.533947	0.5964
AGE^2	-0.081388	0.064303	-1.265696	0.2131
AGE*TRAINMFC	0.152306	0.387476	0.393073	0.6964
AGE*TRAINMKT	-0.672712	1.077083	-0.624568	0.5359
AGE*EMRETENT	0.014634	0.560479	0.026110	0.9793
AGE*ENTREP	-0.001585	0.013651	-0.116084	0.9082
AGE*FUNDS	-0.101602	0.533505	-0.190442	0.8500
AGE	1.631726	1.199593	1.360233	0.1816
TRAINMFC^2	-3.239322	2.279573	-1.421021	0.1633
TRAINMFC*TRAINMKT	7.378435	4.164717	1.771653	0.0843
TRAINMFC*EMRETENT	-2.900105	2.497263	-1.161313	0.2526
TRAINMFC*ENTREP	0.120996	0.063406	1.908289	0.0637
TRAINMFC*FUNDS	-0.668950	1.703349	-0.392726	0.6967

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TRAINMFC	1.899758	5.645283	0.336521	0.7383
TRAINMKT^2	8.014042	5.137930	1.559780	0.1269
TRAINMKT*EMRETENT	-2.300040	3.196034	-0.719655	0.4760
TRAINMKT*ENTREP	0.084941	0.094607	0.897830	0.3748
TRAINMKT*FUNDS	-0.806607	4.620398	-0.174575	0.8623
TRAINMKT	0.732873	14.54197	0.050397	0.9601
EMRETENT^2	-0.520546	0.680954	-0.764435	0.4492
EMRETENT*ENTREP	0.002684	0.029002	0.092553	0.9267
EMRETENT*FUNDS	-1.607568	2.466128	-0.651859	0.5183
EMRETENT	4.013051	7.583285	0.529197	0.5997
ENTREP^2	0.000270	0.000471	0.573109	0.5699
ENTREP*FUNDS	0.006802	0.052045	0.130698	0.8967
ENTREP	-0.128772	0.182139	-0.706999	0.4838
FUNDS^2	2.053626	2.163644	0.949152	0.3484
FUNDS	-1.155691	6.802300	-0.169897	0.8660

R-squared	0.512852	Mean dependent var	0.764337
Adjusted R-squared	0.075668	S.D. dependent var	0.935457
S.E. of regression	0.899369	Akaike info criterion	2.931826
Sum squared resid	31.54570	Schwarz criterion	4.044220
Log likelihood	-73.94348	Hannan-Quinn criter.	3.375993
F-statistic	1.173079	Durbin-Watson stat	1.717668
Prob(F-statistic)	0.312804		

BIOGRAPHY

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