CHAPTER 1
CONTEXT AND RESEARCH PROBLEM

1.1 Global economic situation and foreign investment

Today businesses have faced many critical challenges in regard to economic crises and increasing competition. In terms of economic crisis, the financial collapse of the Thai baht in 1997 caused severe economic turbulence through at South-East Asia. The economic turbulence caused, for example, layoffs that resulted in significant numbers of workers returning to their villages in the countryside and foreign workers were sent back to their home countries. In addition, the overall investment climate of South East Asia seemed to be detrimentally affected by this turbulence. Since then, international investors have been reluctant to invest in developing countries within South East Asia.

The crisis created many problems, one of which was lost profit and cost increases of Foreign Direct Investments (FDIs). Alternative solutions have been recognized, in order to achieve the profit maximization of business. There are wide range of literature available on the subject of manufacturing and production; for example, factors influencing FDIs [M.Duhaime and H.Grant 84], [Elizabeth 02], [Manjit and Leo 05], [Moshe *et al.,* 02] international investment, divestment and relocation [Enrico and Leo 00], [Bart96], [René], [Kevin94], investment and financial planning in production [Lauren and Han 09], [Pekka02], [Kim *et al.,* 06]. Based on the literature review, one of the alternative solutions is the business relocation to areas of lower labor cost. Meanwhile, the worst case among these is the divestment of plant, which means a shutdown of operations, or withdrawal of plant. These strategies have recently been recognized by foreign investors expecting to gain advantages and be faced with fewer problems in conducting business. These situations will influence not only internal business organization but also the local and global economic situation.

For the first part of this chapter, explanation on why developing countries attempt to attract Foreign Direct Investments (FDIs) and how FDI moves to those

countries will be conducted. The second part of this chapter focuses on FDIs in Thailand and in particular, the climate of FDIs' investment in terms of the cost of the labor, and supply chain collaboration and effectiveness. Subsequently, the situation and competitiveness in a Northern industrial estate region, Lumphun, Thailand will be explained. In the last part, relevant research and methods that are used to make decisions on FDI investment, and key successful factors to sustain foreign businesses are reviewed. Thus, introduction to the research of the study will be discussed. The objective of this research aims to help manufacturers to make a decision on their existing situation of investment and provide them with a tool to validate their decisions by considering three scenarios. The three scenarios are: i) relocation ii) divestment and iii) transferring plant.

1.2 Foreign Direct Investments (FDIs) in Developing Countries

Why is FDI so important? The boom in infrastructure construction by FDI in developing countries occurred in the 1990s [Ramamurti and Doh 04]. FDI has played an effective role as a source of finance to a significant number of developing countries [Manjit and Leo 05]. There are many empirical findings that support its positive contributions. For example, Mbekeani [99], reported on the impact of FDI on domestic investment, exports and economic growth which showed a positive relationship in Mexico and Malaysia. Other research by [Larrain 01], shows the positive effect of FDI generated by Intel in terms of net exports, investment, wages and benefits and local purchases for the Costa Rican economy. [Thomsen 99], in his study on the roles of FDI in 69 developing countries found that it not only stimulates economic growth but also has a larger impact than investments by domestic firms. The investment of foreign manufacturing in developing countries can result in rapid economic growth to the host countries. Such contributions are creating new jobs by foreign companies as well as employment within related industries [Cheng and Liang 06], this increases the use of multinational distribution networks even the research and development of many national projects. These have led to higher productivity through increased capital, which in turn has led to high living standards. In addition, relocation activities interest small countries with an open economy and enormous intensive labor

firms to relocate to lower laboring cost countries [Enrico and Leo 00]. The developing countries are thus competing to attract those investors to invest into their own countries.

Consequently, FDI influences governments of developing countries by attracting Multinational Enterprise (MNE) to invest and then help them to transfer technology and contribute skill and knowledge to employees. Thus to attract the movement of FDIs, developing countries have to improve their efficiency to gain the credibility from foreign investors. Furthermore, an understanding the characteristics of FDI's movement and their needs are necessary. Besides Charles *et al.*, [07] also suggests boosting the development of emerging countries, of which the prerequisite is to increase the transparency of the market information. Building better market information databases, providing market databases on the Internet, and decreasing political risk facilitate the decision making of international investments.

Although foreign divestment and international relocation of multinational firms carry important economic implications to the host countries; on the other hand, the negative impacts of foreign direct investment also remain. The negative effect on employment in the host country are that indigenous firms may be defeated by Foreign Investment Enterprises through intensified competition and very often, employees in those firms lose their jobs [Cheng and Liang 06]. Some countries have put restrictions on FDI in certain sectors. For example, India has a negative perspective on Walmart, the largest grocery retailer in the United States, on the overall economy by reducing the number of people employed in the retail sector and depressing the income of people involved in the agriculture sector which is the largest domestic employment sector. Host countries should also be aware of the environmental impact from inappropriate pollution control of MNEs; such as, water treatment, air and noise pollution control, chemical and garbage disposal as demonstrated by the protest from residents living nearby "MapTa Phut" Industrial zone, Rayong Province, Thailand.

Nevertheless the contribution of FDIs to the extremely fast economic growth in most of the East Asian countries has been recognized in the last few decades. Several East-Asian countries are attempting to improve their infrastructure and

provide benefits to satisfy investors more effectively than the other competitors. For instance, in the early 1990s, China, a highly attractive destination for FDIs from developed countries [Wu *et al.*, 06]. The main influencing factor is the advantage in labor cost. These situations have led numerous MNEs relocate their manufacturing facilities and move to China. However, recent evidence suggests, both Vietnam and China are the competitors in the area of labor cost and availability. Evidence reported from the Foreign Investor Confidence Survey, Thailand 2009, shows that in terms of economic conditions, Thailand was stronger in market demand than other competitors in South-East Asia, but not as strong as that of China and India. The next section, describes in detail, the characteristics of FDI relocating from developed to developing countries.

1.3 Characteristics of FDI's movement

This section will describe characteristics of FDIs including asset and knowledge management needed for upgrading technology and transferring the knowledge through the host factories in developing countries. Over the last 20 years, several Japanese companies have moved their production to Thai companies by transferring skills, assets, and technologies. Thus in this section, we will describe the characteristics of FDIs, their trend of movement and why they move from one country to another.

Firstly, to understand FDIs' characteristics, we will distinguish between MNE and FDI. The Multinational Enterprise (MNE) or Multinational Corporation (MNC) is usually used as a synonym. The International Labor Organization (ILO) has defined MNC as "a corporation or an enterprise that manages production or delivers services in more than one country." International Labor Organization defines a MNC as "a corporation that has its management headquarters in one country, known as the home country, and operates in several other countries, known as host countries. Foreign Direct Investment (FDI) refers to long-term participation by one country in another country, usually through participation in management, joint ventures, transfers of technology and expertise. With regard to the United Nations Conference on Trade and Development [UNCTAD 02], FDI is defined as "an investment

involving a long term relationship and reflecting a lasting interest and control of a resident entity in one economy in an enterprise resident in an economy other than that of the foreign direct investor." An equity capital stake of 10% or more of the ordinary shares or voting power of an incorporated enterprise, or its equivalent for an unincorporated enterprise, is normally considered as the threshold for FDI. Besides, [Barry 06] defines FDI as "international investment by a resident entity in one country (the direct investor) with the objective of establishing a lasting interest in an enterprise resident in a country other than that of the investor (the direct investment enterprise)."

However, the characteristics of FDI behave as two types, namely inward FDI and outward FDI. Inward FDI means that foreign investors invest their manufacturing in another country. On the contrary, outward FDI means that a domestic firm establishes a facility abroad. Inward FDI is generally understood to contribute significantly to the economic growth of host countries (De Mello 97).

It is noticeable that FDIs are involved with not only the investment in manufacturing activities, but also the transfer of strategic assets, technology and expertise through the host countries. From 1985 to 1993, nearly one half of the total increase of Japanese manufacturing FDI in East Asia went into the electronics industry [Ernst 97]. A rapid development of electronics technology and the structure of mass production, with extremely short product cycles and constant radical innovations, has meant FDIs have brought fundamental changes to the industrial and market structure. As a result, "cost reduction" and "product differentiation" which had been the two winning strategies that were used to dominate competition in markets for electronics products, were no longer sufficient to provide sustainable competitive advantages. For this reason, firms need to build up their capabilities to constantly differentiate and upgrade their products, and swiftly commercialize these products for well-defined niche markets [Lüthje 02]. Consequently, the host country decides to relocate the existing products and processes to developing countries by transferring existing technology and assets, including expertise from knowledge workers through those workers in the host countries. Then investment of new advanced products is introduced to the potential countries.

Besides, the other sample is plant relocation from European countries to China. [Bart and Henk 96] explained implementation of a relocation strategy, as shown in figure 1.1.

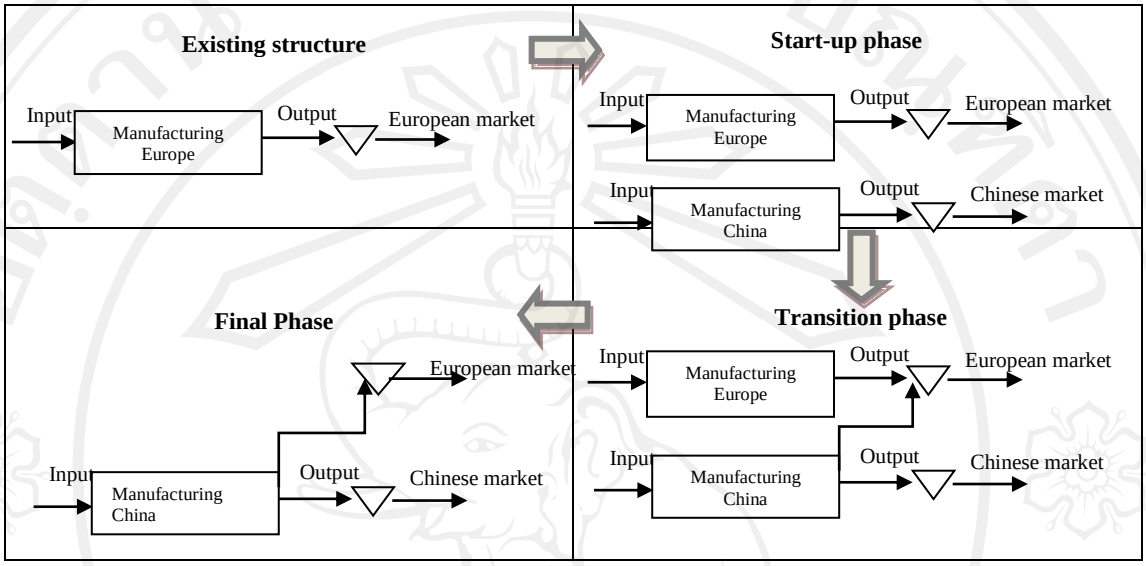


Figure 1.1 Gradual implementation of a potential relocation to China [Bart and Henk 96]

Initially, a Chinese plant would sell its products in the local market, and gradually export to Europe, with reliable product quality and short lead-times. In the final phase, all manufacturing activities might be relocated to China. The remaining European organization would be responsible for activities such as sales, distribution, and after-sales service.

In addition, FDI activities are carried out to ensure optimization of available opportunities and economies of scale. In this case, FDI is termed as "efficiency-seeking". In the long run, through creation of comparatively dynamic advantages in host countries, emerging markets welcome investors to boost the development of their countries but also creat knowledge and a skill base to support incoming foreign investors, hoping to gain more benefits than the other countries.

In this case, characteristics of FDIs have had direct results towards developing countries, especially in electronics manufacturing. This has caused an improvement of developing countries to match with the needs of coming FDIs. Thus,

the business climate, particularly in Thailand, and competitiveness of developing countries will be discussed in the next section.

1.4 Overall climate of doing business in Thailand

Thailand is one of the most attractive countries for FDI. Most foreign companies located in Thailand are automobile industries. Thailand is classified as a developing country in which the majority of Thai people work in the agricultural sector but the labor force is moving toward the industrial sector. Consequently many farm workers become laboring employees in foreign companies. In the past, the labor cost of these workers was cheap which can attract great investment from international companies. But this advantage of low-cost labor was eroded by the high speed of development and the lack of skill. This calls for a more skillful and knowledge-based economy in Thailand.

Although a large part of the value-added process by Thai firms may come from assembly, the fact that high technology products account for a growing share of exports indicates that the production structure in Thailand is moving from labor-intensive to more technology-intensive. The shortage of skilled labor and professionals, the low level of Research and Development (R&D), and the weak cooperation between research institutes and industrial sectors remain serious constraints in Thailand. Qualified professionals are difficult to find, and both skilled and unskilled production workers are scarce compared to countries with a similar developmental level. Many small or medium-sized firms in Thailand do not have the capability and incentives to undertake R&D in house. Public investment in applied research is essential for their technological upgrading.

Furthermore, from the evidence [PICS 07], reports that nearly 40 percent from the survey lack skilled workers as one of the three most binding investment constraints they faced. A similar share of firms also viewed “skills and education of available workers” as a major or severe business obstacle. This problem was also emphasized in [PICS 2004]. The key reason for numerous job vacancies, many of which are hard to fill, is the poor quality of the labor force. Over 40 percent of firm

managers mentioned that vacancies arise because many applicants lack the basic skills or technical skills that firms require (see Figure 1.2).

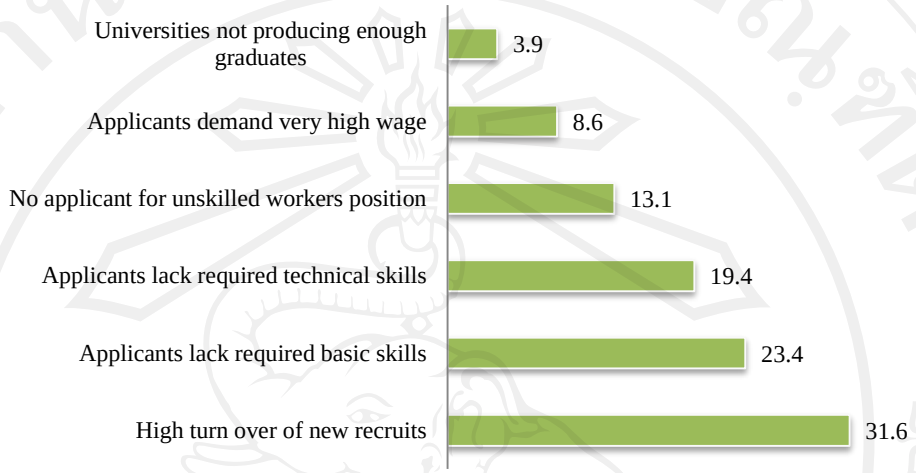


Figure 1.2 Most Important reason for job vacancies (Percent of firms)

Source: Thailand PICS 2007

Thailand ranked in 15th place out of 178 economies in terms of ease of doing business, in the 2008 Doing Business report, and outranked Malaysia, Indonesia and the Philippines. Among East Asian nations, only Singapore is better ranked. However, Foreign Investors' Confidence during 2009 reported that the situation in Thailand dropped from the previous year in terms of both operating results and liquidity. Such decreasing confidence naturally had an effect on improvement plans in 2010 causing a delay of investment projects. Prolonged political turmoil occurred in Thailand and further eroded confidence. For instance, following the protest against government at the South-East Asian Nations Summit during April 2009 in Pattaya, a worse series of political protests happened in Bangkok, in 2010 from March to May against the democrat party, and combined with continuing unrest in the South, lowered the confidence of foreign investors who were worried about government stability. Thus, to describe the confidence levels of FDI, the situation of investment in Thailand since 2007 from the BOI survey report, are indicated in Table 1.1.

Table 1.1 Situation of investments in Thailand from 2007 to 2009 (Foreign Investor Confidence Survey Report: BOI, Thailand)

Situation of investments	Year		
	2007	**2008**	**2009**
Maintain	43%	54.80%	58.90%
Significant expansion	7%	10.50%	5.20%
Reducing or Withdraw	5.60%	3.60%	5.60%

From Table 1.1, it is found that existing companies maintained their investment levels from 2008 until 2009. Significant expansion dramatically rose from 7% to 10.50% in 2008, however rapidly decreased to 5.2% in 2009. Reducing or withdraw businesses were noticeably accrued from 3.6% to 5.6% in 2009. In summary, various concerns on FDIs' decisions have been specified. The worsening situation of labor cost is one of the factors causing FDIs to expand or relocate their businesses to other competitive countries such as China, Vietnam and India. However, they focus not only on costs and benefits but also internal and external environmental factors. For example, constraints related to the macroeconomic environment and policy, political situation, skilled labor, proximity of resources and markets among supply chain partners, or even reliability in supporting infrastructure and logistic networks. To describe the overall business climate, Thailand Productivity and Investment Climate Surveys [PICS 07] has noted that the situation of Thailand's investment climate seems to have worsened between 2004 and 2007, judging by the opinions of firm' managers. This deterioration is related to the political uncertainty and the changes in global economic climate.

To clarify FDIs situation, the investment characteristics of the Northern Region Industrial Estate, Thailand is interesting. Thus data collections and characteristic regarding businesses in the electronics sector of this area will be discussed in the following section.

1.4.1 FDIs in Northern Region Industrial Estate of Thailand

In order to gain the benefits of low-labor costs, FDIs are interested in investing in developing countries like Thailand. Especially, in Lumphun province, the Northern Industrial Estate, the electronics sector is supported by FDIs' transferring from their host countries. The main reasons are higher laboring cost in their own countries as well as being faced with increased competition. They are seeking to gain the advantages from countries that can provide them the most benefits in terms of cost, skilled labor, and infrastructure facilities.

The effectiveness in supply chain and logistics are more relevant to this sector. As described above, the structure of the electronics product's network is worldwide. In Lumphun industrial estate, most of the electronics products produced are directly exported to the parent companies or their affiliates. Few of them are sent to direct customers. The main countries of parent companies are in Asia, including Japan, Singapore, Hong Kong as well as mainland China. Figure 1.3 shows the electronics product's network for this industrial estate.

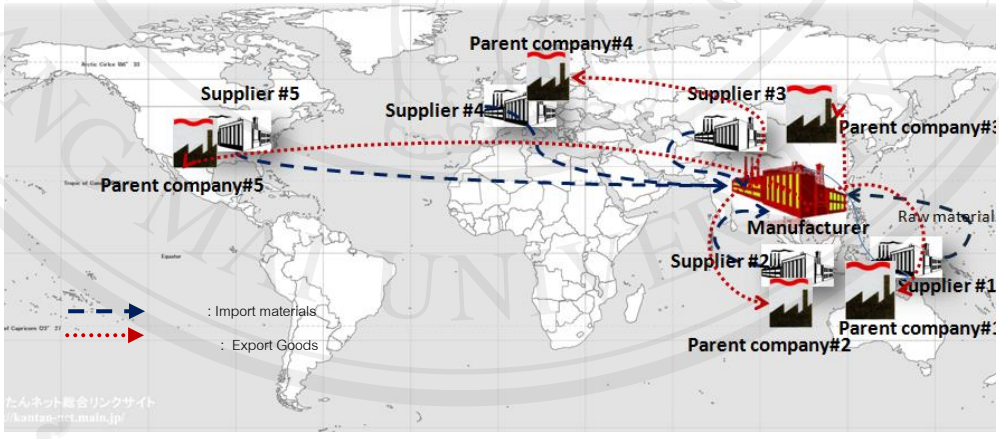


Figure 1.3 Electronics product's network for Northern Region Industrial Estate, Lumphun, Thailand

The raw materials used in the electronics industry in the Northern Region Industrial Estate are mostly imported. More than 50% of the imports are electronics components, printed circuit boards, metals, plastics and glass. Machinery parts, computer components and instruments are secondary by imported value. Within the

overall import of raw material, about 50% are dominated by Japanese companies. While United States, Singapore, Malaysia and Hong Kong are the second dominators.

Regarding this characteristic of electronics manufacturing, the need for supply chain and infrastructure effectiveness, high technology, cost investment, and skill base requirements are mandatory. This will influence FDIs' decision to invest and expand their business in this area. However, no new investors have decided to invest in the area since 2006. As shown in Table I.2, the number of factories has dramatically increased since 2004 from 65 to 73 in, 2005 which is about a 10% increase. However, in the following years, the number of new factories launching has not been noticed. Besides, two factories had been withdrawn from in 2005 and 2007. One of the main reasons for the withdrawal is the high competition among foreign countries.

Table 1.2 Investment situation in Northern Region Industrial Estate, Thailand from Year 2002 to 2010 [Office of Northern Region Industrial Estate, Lumphun, Thailand].

Year	**Permission on launching new factory**			**Withdraw**		
	No. Of factory	Investment (Million)	Employment (person)	No. Of factory	Investment (Million)	Employment (person)
2002	64	56,442	37,139	-	-	-
2003	65	60,790	38,876	-	-	-
2004	65	65,361	42,964	-	-	-
2005	73	66,149	44,623	1	30	30
2006	75	71,340	48,973	-	-	-
2007	75	65,823	48,870	1	45	104
2008	75	65,823	64,222	-	-	-
2009	75	65,823	39,100	-	-	-
2010	75	66,837	43,591	1	n/a	1000

From Table 1.2, the foreign investors are still reluctant to expand or invest their businesses. Thus, up to now new FDI investors have postponed their decisions to invest more in the area. Most factories which locate in this area are electronics manufacturing, which need distinctive requirements. For example, intensive labor, high technology, cost investment, sufficient supply chain and infrastructure for distribution of supply chain networks. Consequently, those particular characteristics depend on FDI in funding, implementing and transferring of technology and operating the businesses. These potential factors would have substantial implications on the future development of the economy and FDIs situation. Thus, the next section will discuss further details on the capabilities to attract FDIs related to the requirement base of this area.

1.4.2 Investment climate and competitiveness in industrial estate region, Lumphun, Thailand

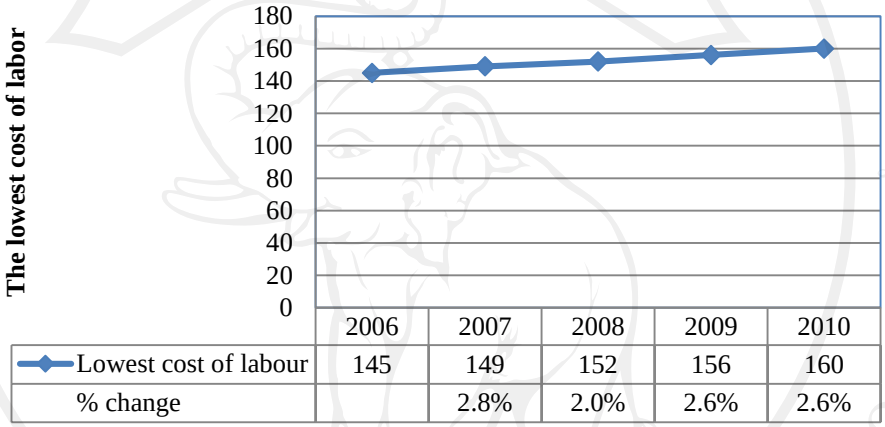
From the previous section, the awareness on cost of labor, skill base requirement, and supply chain effectiveness are potential factors affecting on FDIs' investment in the industrial estate region, Lumphun. To sustain the existing businesses and attract new comers, understanding the climate of investment and then improving competitive advantages will help to achieve this goal. This section will describe the climate of FDIs' investment and competitiveness in this area. Then a comparison with other competitors, for instance, China and Vietnam will be also represented.

- Cost of labor

From the previous section, it is advisable that the needs of the electronics sector require high cost of investment and advanced technology to support manufacturing processes. Intensive labor is one of the main characteristics required from electronics companies in the region.

Cost of wages is the critical factor affecting the competitive performance of doing business. Compared to neighboring countries, the lower cost of labor in China and Vietnam will strongly attract FDIs investment, which is caused by the high supply

of labor in the market. These situations result in the loss of the investment and relocation of FDI to other areas. The lowest cost of labor in the Lumphun province has been continually increased as shown in Figure I.4. Since 2007, the minimum rate of wages increased considerably from 145 to 149 baht per day, which is 2.8% higher than the previous year and has increased further. For this reason, manufacturing which mainly depends on laboring workforce to produce, may decide to move to other cheaper laboring countries.



	2006	2007	2008	2009	2010
Lowest cost of labour	145	149	152	156	160
% change		2.8%	2.0%	2.6%	2.6%

Figure 1.4 The lowest cost of labor of Lumphun province, Thailand [MOL, Thailand 10]

- Asset management and skill requirement

According to the evidence of Japanese companies, between 1985 and 1993, nearly one half of the total increase of Japanese manufacturing FDI in East Asia was invested in the electronics industry [Ernst 97]. Rapid technological advances in electronics components, combined with mass production, extremely short product cycles and constant radical innovations, have brought fundamental changes to the industrial and market structure. Hence these characteristics serve as critical aspects of the electronics industry which should be recognized by the province. This means that FDIs involve not only the investment on manufacturing activities, but also the transfer of strategic assets, technology and expertise to the host countries.

As a result, “cost reduction” and “product differentiation” (two winning strategies) that were used to dominate competition in markets for electronics products,

are no longer sufficient to provide sustainable competitive advantages. For this reason, firms need to build up capabilities allowing them to constantly differentiate and upgrade their products, and swiftly commercialize these products for well-defined niche markets [Lüthje 02]. Consequently, the home country decides to relocate the existing products and processes to developing countries by transferring existing technology and assets, including expertise from knowledge workers through those workers in the host countries. Then investment of new advanced products is introduced to the potential countries. To support the transfer of assets, knowledge and skilled expertise, the quantity and quality of the workforce are important components for running a business. However, it is difficult to enhance basic and technical skills and to find skilled labors [PICS 07]. However [PICS 08] reported that a sufficient quantity and quality of skilled labor in Thailand is still perceived as an attractive investment factor for foreign investors. There are good prospects for qualified managers, but the factor of skilled labors has been an obstruction. This meant that the availability of qualified managers in Thailand is sufficient, though it is not a strong factor affecting the attraction of foreign investment. On the other hand, prospects for the quantity and quality of engineers and technicians were moving in a negative direction. For this reason, the shortage of skilled labor remains a key business constraint. Thai government had to promptly introduce various initiatives to improve the quality of the labor force.

- Supply chain and Infrastructure

Since the network of electronics products is worldwide, importing and exporting of raw materials and end products are the main functions to operate the business. Considering the overall business environment, foreign investors are more satisfied with infrastructure than other factors, i.e., law and regulations, and economic situation. Foreign investors viewed Thailand as having better infrastructure than the competitors [BOI 09]. Thailand's infrastructure for transportation systems, public utilities and communication services, and logistics management has improved qualitatively, as well as quantitatively. The foreign investors expressed greater satisfaction with these improvements than in the previous years.

To be efficient in the overall supply chain network, well organize the internal supply chain can help to satisfy customer's requirement. The advent of supply chain collaboration creates the need to pay special attention, at the intra-enterprise level (between the different plants and the different processes) and at the inter-enterprises level (between the different partners). Mutual understanding and collaboration among companies will help to create many beneficial outcomes on manufacturing.

Furthermore, unwelcoming situations among existing foreign companies in this area have appeared. For example, dissatisfaction in compensation and employee benefit in one subsidiary of a Japanese company in December, 2008, resulted in a strike of labor workers. This situation was worsened by the dismissal of some employees from that company [Financial assistance of the European Union, Good electronics on the spot, November 2009]. One foreign electronics company suspended pay of employees for 3 months after the company faced a serious internal problem in 2009.

Finally, it can be concluded that situations in this area may lead to a lack of foreign investors' confidence as outlined as below:

- As intensive labor is one of the main characteristics required for electronics companies in the area, considering cost of labor is the critical factor affecting competitiveness of performance. However, the minimum wage, required by provincial law, has been continually increased when compared with neighboring countries. The increasing wage cost has caused manufacturers to move to cheaper laboring countries.
- To support the transfer of asset, knowledge and skilled expertise, especially in electronics manufacturing, the quantity and quality of the workforce have been emphasized. However, the quantity and quality of engineers and technicians are insufficient, and skilled labor is difficult to recruit. This is because the available workforce has poor skills or the skills workers possess are not matched to the firm's needs.
- Although infrastructure has satisfied investors more than other factors, the infrastructure for transportation systems, public utilities and communication

services, and logistics management still requires improvement, in terms of both quality and quantity. More than 50% of imported raw material from neighboring countries of electronics manufacturing in this area need not only high technology, cost investment and intensive labor, but also supply chain and infrastructure effectiveness.

- Conflict between employees and managers, for example, dissatisfaction of social welfare, leads to poor performance and decreased motivation in the workplace. At a small scale, this may result in the shift of the production line elsewhere, but at larger scales may involve shutdown and relocation of extant operations.

For these reasons, as the climate of doing business and the competitive advantage have been affected by cost of labor, skill-base requirements, and supply chain effectiveness, or continual existence of crises, there are many problems for FDIs in Lumphun, for instance, whether to relocate or divest the businesses. In terms of this, the crises can affect the global difficulties, such as; people's income can affect economic problems that lead to social problems in the province.

To prevent business relocation or divestment, discovering potential factors affecting to the crises will stimulate FDIs investment decisions. Thus, the following section will explain factors and methods considered to affect FDIs decision from the standpoint of relevant researchers.

1.5 Related research on FDIs decision

Regarding potential factors affecting business crises, there are several factors affecting FDI decisions. This section will explain the argument on related research of FDI investment decision and their influencing factors. These factors may differ significantly from one location to another depending on the attractiveness of the particular regions of the country [Manjit and Leo 05]. Hence, comparison of the potential factors with the case study in Northern Region Industrial Estate, Lumphun, Thailand was conducted.

The issue of international trade was firstly described when the Principle of Comparative Advantage was introduced by Robert Torrens in 1815. However, the principle is usually attributed to David Ricardo who was the first to publish on the Principle of Political Economy and Taxation in 1817. In economics, the law of comparative advantage refers to the ability of a party (an individual, a firm, or a country) to produce a particular good or service at a lower opportunity cost than another party. "Comparative advantage" can be defined as "the ability to produce a product with the highest relative efficiency given to all the other products that could be produced. Comparative advantage explains how trade can create value for both parties even when one can produce all goods with fewer resources than the other. The net benefits of such outcome are called gains from trade. It is the main concept of the pure theory of international trade.

Many researchers have worked on MNCs, and identified several potential factors on FDIs investment needed to support their decision and help to satisfy new investors' requirements. The relevant factors and approaches applied for making a decision on FDI investment from related research and empirical data from questionnaires will now be described.

1.5.1 Influencing factors on FDIs decision

Several researchers have focused on financial and economic variables for influencing factors on FDIs decision. For example, [Chun and Tang 07] summarizes variables attracting FDI inflows. From their evidence, most variables are relevant to cost and benefit such as capital to labor, total sales value, total investment in Research and Development (R&D). However, there is evidence showing the different aspects of influencing factors on FDIs. Nowadays not only cost and profit factors can be considered but also indirect factors, for example, contribution to the host country and social environment, infrastructural deficiencies, inadequate worker skills, and supplier availability [Bart and Henk 96], [Yurimoto and Masui95], [Mzanda and Buys 06]. In addition, [Chan *et al.,* 95] found that the main reasons for business relocations were cost savings and business expansion, regardless of whether the firm was a plant or a headquarter. In the work of [Chun and Tang 07], there are 24 variables from previous

literature that have been considered with regard to the FDI environment in China. Among those factors, the most frequently selected determinants of FDI flows were productivity, research and development investment, capital to labor, educational level, and export and sales value. Meanwhile, [Bart and Henk 96] argues that factors in the international environment like taxes, barriers to trade and exchange rate, will affect the allocation of doing business. In term of technology transfer in South Africa, investigating the fact of the electronics sector, the researchers criticized the need to be integrated from the start to acquire capabilities focused on developing knowledge based, security and subcontract existence.

However, from late 1990 until the beginning of 2000, the importance of workforce factors are distinctly determined. Workforce factors refer to variables such as cost of "labor wages" [Chun and Tang 07],[Yurimoto and Masui95],[Leonard 00],"education level" [Chun and Tang 07], [Yurimoto and Masui95], [Leonard 00], and "employee skill" [Bart and Henk 96],[Yurimoto and Masui95],[Arntzen 95],[Matthias 06],[Haug 92],[Lowe 02],[Mzanda and Buys 06] or even "loyalty to the employer" [Bart and Henk 96],[Yurimoto and Masui95]. Moreover, empirical evidence from investigated variables found mixed results. For example, [Globeman 99], [Jenkins 02], and [Kravis 89], found in their empirical investigation that wages are negatively associated with FDI. A study of FDI in Turkey [Coskun 96] and [Galan 01] found that labor cost is only a moderate factor, while Schneider and Frey [85], in their study of FDI found that skill-level is more important than labor cost. However,[Bagchi-Sen 95] and [Dunning 89] found that the real wage factor is more important for service MNCs compared to manufacturing MNCs [Manjit and Leo 05].

Finally, the consequences from the review of literature on factors which affect investment decision are presented in Table 1.3.

Table 1.3 Factors influencing investment decision

	Employee skills	Expatriate management	Loyalty to the employer	Wages of employees	Educational level	Unionization	Work stoppages	Orientation of new employee	Living costs	Market demand	Economic development policy and uncertainty in fiscal policies	Competition	Tax	Exchange rate	Interest rate	Inflation rate	Financial service accessible	Country risk	political system	Income	Non-tariff barrier to trade	Inadequate access to credit	Total sales values	Export sales values	demography	BOI investment incentive and support	Product market proximity	Raw material proximity	No. of project or investment in R&D	Logistics cost	Transportation	Telecommunication	Public utilities	Communication strategy	inventory cost	Supply chain cost	Supply chain risk	supplier reliability	Technological support	educational facilities	Ordering lead time	In-bounded lead time	Production quality	Raw material quality	Subcontracting existence	Firm size	Favourable atmosphere	public peace	Benefits due to access to overseas markets	Inexperienced in equipment and technology use	Culture	religion	Trade union movement	Community relation	Employee relation	productivity and crisis effort	leadership style and organizational climate	labor intensive technology	Security	Internal culture
Electronics industrial economic report (2008)											1	1																1	1							1			1																					
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S.Yurimoto, T.Masui,1995	1			1	1	1	1		1	1	1	1	1					1									1	1												1				1			1	1												
MacCormack et al.,1944	1																										1				1	1						1							1				1	1										
Arntzen et at., 1995	1										1																1	1		1											1																			
BOI investment survey 2008											2			1	1	1																1																	1											
Executive summary 2008	1				1						2		1	1		1	1												2	1	1	1	1																											
Brian Leavy,1984					1	1	1	1							1			1	1						1									1						1											1	1	1	1	1	1	1			
P.Liang, F Song, 1994				1						1					2																																													
Leonard K.Cheng, Yum K.Kwan, 2000	1			1	1						1		1							1											1																													
Matthias Busse, Carsten Hefeker, 2006																			1														1																			1								
Hodder, J.E., Dincer, M.C., 1986													1	1	1															1	1																													
Breitman and Lucas,1987	1												1	1							1																																							
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	12	1	1	6	5	2	2	1	1	6	11	5	15	21	7	2	1	2	4	1	9	1	1	1	1	1	3	5	5	4	7	4	4	1	5	3	3	1	1	2	1	1	1	1	2	2	1	1	2	1	1	2	1	1	1	1	1	1	1	1
									31																	89																50																		22
	Factor endowment									Financial and Economic situation																	Supply Chain and Infrastructure																Others																	

From Table 1.3, we synthesize and classify the various studies according to the attributes used for FDI investment. Those factors can be categorized into four groups as follows: (i) Factor endowments, (ii) Financial and economic situation, (iii) Supply chain and infrastructure, (iv) Other related contexts. Consequently, the four aspects from the result of the literature review are explained below:

- Factor endowment

The consideration on factor endowment for FDIs investment is mostly placed on labor. A lack of skilled labor, engineers, specialists or local managers is a critical issue that foreign investors take into consideration from this area. The following key issue focused on labor cost. In addition to enhance basic and technical skills, many researchers look for educational level and experience as more valuable than loyalty.

- Supply chain and infrastructure

With regards to the supply chain aspect, cost relevant to supply chain activities such as holding cost of inventory, delivery cost corresponding to the proximity of resources and product market, are crucial factors affecting foreign investors' decisions. The factor of risks involved among supply chain partners has a direct impact on the decision. In terms of infrastructure, availability of transportation and the number of research and development project become high priority over all others, including telecommunication, public utilities systems, and educational facilities. According to supply chain and infrastructure, the number of project on research and development (R&D), logistic and supply chain cost, telecommunication network, or even risk in the supply chain are becoming critical factor for investors.

- Financial and economic situation

The financial and economic situation seems to be the most important factor for foreign investors when deciding to invest, especially the factors affecting exchange rate and taxation. These were considered as vital factors by the researchers. Simultaneously, researchers have placed high importance on two other factors, namely economic development and uncertainty on fiscal policies. Moreover, from the literature interest rate is also a significant factor, which directly impacts the economic

situation. In addition to the global economic crisis, political uncertainty is another important factor affecting the country's economy.

- Others

Among those three groups of factors influencing investment decisions, there are some less obvious factors. Different firm characteristics often imply different concerns: for example, small firms were much more concerned about inadequate access to credit than larger firms. Those factors can be ordered and grouped according to the literature from the most to the least as shown in Figure 1.5.

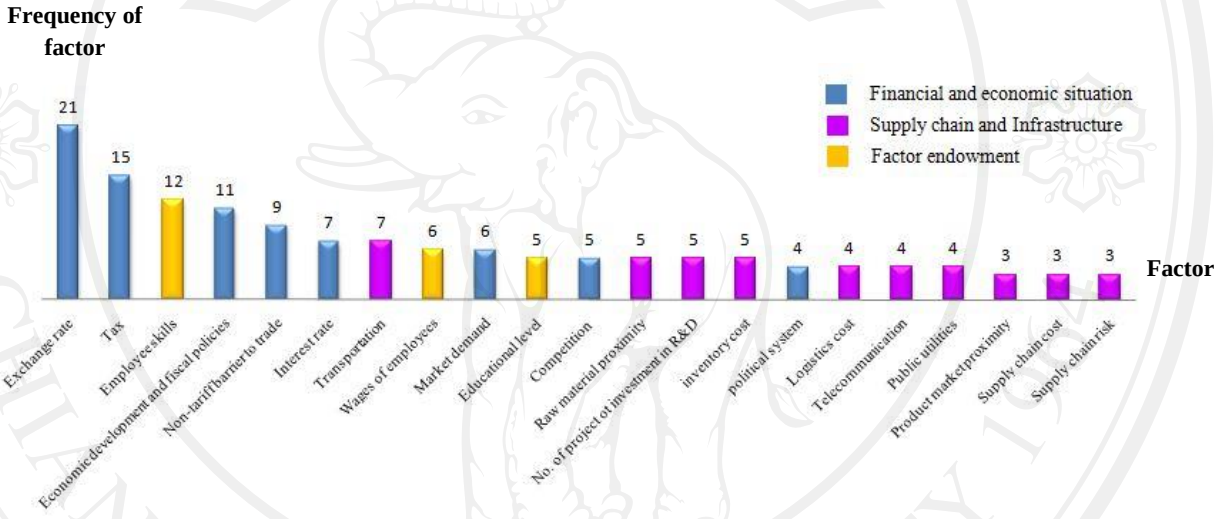


Figure 1.5 Frequency of factors influencing investment decision

From Figure 1.5, the most interesting factor is the financial and economic situation. Those factors include exchange rate, tax and interest rate, fiscal policy, market and competition. Emphasis in the area of skills of employee, supply chain and infrastructure are recognized as the following group. Apart from that, influencing factors frequently used to consider FDI investment are employee skill and performance, supply chain and supporting infrastructure, including the recognition of risk among supply chain. Regarding influencing factors on the supply chain aspect, those factors can be explained as the importance of the supply chain collaboration for the decision on plant relocation and investment. Most researchers emphasize the cost of production, supply chain between supplier and customer or even supply chain risk. This includes the consideration on external factors as an economic development policy.

1.5.1.1 FDI's characteristics

Within the FDI investment literature, there are also several researchers who studied different FDIs' characteristics. Some focused on a decision to set up new plant abroad, while others aimed to invest a new affiliated plant from the headquarters including the market selection to justify their supply chain networks and gain more benefits. It is noticeable that all of those studies are considered in terms of profit optimization from their investment. Thus, table 1.4 presents the characteristics of international investment for FDIs.

Table 1.4 The characteristics of international investment for FDIs

Reference	FDIs' characteristic	Context	Method
[Shigeru 95]	Overseas plant location from Japan to European Countries.	The research designed a decision support system in order to give appropriate information to manufacturers who are going to set up plants in European countries.	Analytic Hierarchy Process (AHP)
[Bart and Henk 96]	A decision on plant allocation from Europe to China	The main aim is to present a dynamic allocation method to support manager in (re)design of international facility network.	Statistic analysis: Cost function analysis Dynamic analysis: Simulation with cumulative profitability in different scenarios

Table 1.4 (continued)

Reference	FDIs' characteristic	Context	Method
[Usher *et al.*, 01]	Material handling investment decision	The two systems are proposed as conveyor and Automated Guided Vehicle (AGVs) Systems. Among the 2 alternatives, the decision are considered by direct economic and intangible value of non quantifiable factors, including ease of use, flexibility, safety and company image.	-Net Present Worth (NPW) -Value Score
[Viswanadham and Balaji 05]	Decision between FDI and outsourcing.	No theoretical models in the literature can be applied in a quantitative context for the decision between FDI and outsourcing, the used of MINLP approach applied on FDI outsourcing decision for acyclic supply chain. To propose quantitative model, three decisions are explained i) multi-product, ii) incorporate tax and iii) incorporate risk due to production.	Mixed Integer Nonlinear Program (MINLP)

Table 1.4 (continued)

Reference	FDIs' characteristic	Context	Method
[Trappey et al., 07]	International investment approach and decision making process of financial holding companies.	They develop a decision model, designed by Johanson and Vahlne's model, considering financial measures. The model helps firms manage the risks of their investments and derive accurate investment strategies based on investment objectives and constraints. To derive matching model, financial managers are also interviewed.	Lingo and Excel software used to solve financial values.

From the characteristics of FDIs and the related context listed in the table above, the definitions, relevant to the characteristics of FDI's behavior, are mentioned in various aspects. Some of the researchers emphasize the meaning of "relocation" as the activities that the affiliate cannot continue the operational activity and then relocate to another country, just outside home country. Meanwhile, some of the research argues that low labor cost countries are the expected places for relocation. It is not only relocation or setting up a new plant but also adding production line or even increasing production loading that is considered as plant relocation. This conclusion has the same implications for offshore manufacturing. Regarding the meaning of allocation and technology transfer activity, both have similar meanings. Technology transfer activity describes the strategy on knowledge and technology transfer, while allocation can be defined as determining the location, capacity of manufacturing, and

distribution facilities in order to (re)design the international network: for example, by establishing new plants abroad.

Divestment is subdivided in several categories: i) an affiliate is closed ii) manufacturing affiliate is turned into a non affiliate and iii) the affiliate is sold to another firm. Then a divestment was identified when the cessation of businesses or sales of manufacturing activities had actually take place. Those definitions are presented in Table 1.5.

Table 1.5 The definitions relevant to characteristic of FDI's behavior

Reference	**Definition**
Relocation	
[Moshe *et al.*,02]	A form of organizational change which has been distinguished by 2 main features. It is a comprehensive change involving all the employees, the entire social network, and the whole material and equipment make-up. It affects not only the employees' working life but also their non-working life. Plant relocation is commonly undertaken in order to pursue company growth and development, or to solve financial and operational problems
[René 06]	Manufacturing activities that were discontinued in the affiliate were: relocated to another country, either by establishing a new affiliate, or adding product line(s) increasing the production loading in an existing affiliate in that country
[Nakosteeen 87], [Pellenbarg and Van 03]	Relocations are also of immediate policy interest as they tend to involve larger plants and growing plants.

Table 1.5 (continued)

Reference	Definition
[Fred 96]	Global relocation takes place when a firm moves one or more business activities to a location outside its home country
	Business relocations are claimed to be job exporting with firms moving to low-cost labor-abundant locations (Arthuis,1993;OEDC,1995; Brainard and Riker, 1997; European Parliament,1998) International relocation is defined as either the decision to move part of the production to another country or to replace part of the production by a combination of an investment abroad and subcontracting during the period 1990-1996.
[Min and Melachrinoudis 99]	To adapt to dynamic changes in business environments surrounding the firm's supply chain operations. Such changes include changes in supplier and customer bases, distribution networks, corporate re-engineering, business climate and government legislation
[Derek 99]	Firms are moving facilities away from home countries to overseas low-cost sites, resulting in closures or significant staff reductions domestically.
Divestment	
[René 06]	The cessation of manufacturing activities by a Japanese firm in an existing affiliate. They subdivided divestments in several categories An affiliate is closed A manufacturing affiliate is turned into a non-manufacturing affiliate The affiliate is sold to another firm. A divestment was identified while the cessation or sale of manufacturing activities had actually taken place.

Table 1.5 (continued)

Reference	Definition
[James 94]	They identified types of divestment decision into Strategic divestment and financial divestment. For Strategic perspective of internal to the firm, there are 2 meanings 1) Shut-down of operations and 2) Reallocation of resources among a series of ongoing integrated operations. External to the firm, there are also 2 definitions: 1) Sale of a product, product line, or part or all of a division to an independent company. For financial perspective, internal to the firm, it is issuance of stock in a subsidiary to firm's own shareholders. External term, it is sale of a stock interest in a subsidiary to the general public.
Technology transfer	
[Lan 96]	A broad set of processes, covering flow of knowledge, expertise, know-how, equipment, machinery, software, medium ware and techniques amongst stakeholders and other markets around the world.
[Gross 96]	It includes learning to understand, choose, utilize, adapt and replicate technology.
[Harry 01]	Mention as knowledge transfer. This process requires new managerial skills, but can become a powerful competitive weapon.
Allocation	
[Bart and Henk 96]	Determining the location, number, and capacity of manufacturing and/or distribution facilities of multinationals on strategic decisions concerning the (re)design of international networks, for example by establishing new plants abroad.

Table 1.5 (continued)

Reference	Definition
Expand Business	
Foreign investor confidence survey report [BOI 08]	Expand the businesses divided into 2 main categories:1) expand slightly or on a small scale 2) expand significantly or on a large scale.
Offshore manufacturing	
[Lu 09]	Moving production facilities to low-wage countries

Finally, it was found that among those definitions, there are three different strategies regarding the characteristics of FDI's behavior. The three strategies can be referred as i) relocation plant, ii) divestment plant and iii) transferring plant, the definitions are explained in detail as follows.

"**Relocation plant**" Main issues argued by [Moshe *et al.*, 02]: the change of employees, social network and assets that affect not only employees but also their non-working life. This situation aims to pursue the growth of company, or to solve financial and operational problems. [René 06], and [Fred 96] mentioned the activities of the affiliated company while relocating to another country for a new establishment or adding a new production line both in a new and existing affiliate company. [Derek 99] explains the movement of facilities from home countries to overseas low-cost sites.

"**Transferring plant**" is referred to as a flow of knowledge, expertise, know-how, equipment, machinery, software, medium ware and techniques amongst stakeholders and other markets around the world [Lan96]. [Gross96] includes learning to understand, choose, utilize, adapt and replicate technology among the process flow, while [Harry 01] outlines requirements for new managerial skills among the process.

"**Divestment plant**" [René 06] mentions the cessation of manufacturing activities in an existing affiliate by closing, turning to non-manufacturing or selling of the affiliated company to another firm. [James 94] claims that there are situations of shutting down operations and reallocating resources.

Since it can be concluded that the main characteristics of FDIs' investment can be classified into three situations. The following section will describe the applicable approach and method used for each situation on making a decision for FDIs' investment.

1.5.2 Approach of decision making on FDIs investment

Several authors have developed approaches under various points of view concerning business relocation. For instance, the incorporate management participation has applied dynamic analysis on cost simulation which is used to support managers in redesigning the international facility network from Europe to China. The method considers the return on investment or profitability combined with soft variables; for example, loyalty to employer, and employees' skills [Bart and Henk 96]. [Viswanadham and Balaji 05] proposed a quantitative model for optimal decision making between FDIs and outsourcing with multi-stages of supply chain risk caused from the supply chain, inventory and transportation cost. Moreover, to explore technology transfer by FDIs in the electronics sector of South Africa, the researchers criticized the need integrate from the start to acquire capabilities focused on developing the knowledge base, security and subcontract existence [Mzanda and Buys 06].

As far as investment in manufacturing is concerned, profit is a key factor for the investor. Therefore, minimizing costs and maximizing revenue are undertaken to maximize profit. Consequently, numerous investment decisions consider financial value: such as, return on investment (ROI), net present value (NPV), and payback period (PB). Research in production planning has subsequently been carried out to maximize the NPV [Kersten et al., 07]. The approach, used for optimizing decision making, estimates the current value of cash flows relating to an investment [Califf *et al.*, 08]. [Liang and Song 94] mentions that in term of evaluating a project, most financial analysts prefer the use of the NPV than other methods which have certain shortcomings. For example, the method of Internal Rate of Return (IRR) implies the assumption of reinvestment which is irrational in some cases; the method of payback period cannot reflect the time value of money. Thus, table 1.6.analyses several techniques used for FDIs' investment.

Table 1.6 Survey of literature on techniques used for FDIs' investment

	Reference	Context	NPV	Value score	Break-even analysis	AHP	Sensitivity analysis	Game theory	IRR	Multi-criteria	Risk attitude	ROI	Delphi technique	Risk evaluation	Data Envelopment Analysis (DEA)	Mixed Integer Nonlinear Program (MINP)	Debt and equity ratio	Dividends paid as a percentage of earning	Interview and document analysis
1	J.S. Usher, A.H.Kamal, S.W. Kim, 2001	Material handling investment	1	1															
2	Shigeru Yurimoto, Tadayuki Masui, 1995	Overseas plant location				1													
3	P.Jovanovic, 1999	Project investment					1	1	1										
4	C.J.Bacon, 1992	Investment decision	1						1						1				
5	J.J.Choi,1989	International diversification							1										
6	Brian Leavy, 1984	Country's risk assessment								1		1		1					
7	C.V.Trappey et al ,2007	International Investment decision for financial companies	1								1								
8	P.Liang, F.Song, 1994	Capital investment													1				
9	W.K.Wang, 2005	Government real estate investment														1			
10	Bart Cos, Henk Akkermans, 1996	Plant allocation											1						
11	N.Viswanadham, Kannan Balaji, 2005	Investment or outsourcing															1		
12	Hodder and Dincer,1986	International plant location	1																
13	Breitman and Lucas,1987	facility location, capacity planning, material sourcing, product allocation and new product introduction															1		
14	Irene M.Duhaime,John H.grant,1984	Divestment decision											1					1	1
15	Califf, Rasiel, and Schulman,2008	Optimize profit within legal and ethical standard in Pharmaceutical and medical device industries	1																
16	M.M. Naim et al., 2007	selection in the ordering policy of a production planning and control system	1																
17	Ralf Spann,2008		1																
18	Magni, Carlo Alberto,August 2005		1																
19	Barlow 7 Wender, 1955																		1
		Sum	**8**	1	1	1	1	1	**2**	1	1	**3**	1	1	1	**2**	1	1	1

From Table 1.6, it is noticeable that among several techniques, the most used financial tool to evaluate cost of doing business for FDIs is Net Present Value (NPV). The technique is used in relevant context, e.g., investment in advanced material handling system [Usher *et al.,* 01], international plant location [Hodder 86], profit optimization in pharmaceutical and medical device industries [Califf *et al.,* 08] which are generally used for supporting the decision of doing business or selection of plant location. Some researchers refer to techniques of Return on Investment (ROI) and Internal Rate of Return (IRR) applying for plant allocation, divestment decision or the country's risk assessment. However, many studies use a variety of techniques, e.g., [Qi Chun and Tang 07], have proposed a genetic algorithm (GA) as an analytical tool to define fitness function as a variable selection algorithm and analysis of inward Foreign Direct Investment (FDI). [Viswanadham and Balaji 05], proposed a quantitative model for optimal decision between FDI and outsourcing with multi-stages of supply chain risk caused from the supply chain, inventory and transportation cost.

1.6 Comparison of critical factors: A case study in Thailand

From the previous section, the factors from the survey of the literature were presented in four aspects: i) factor endowment ii) financial and economic situation iii) supply chain and infrastructure iv) others related with internal management. Then to confirm the classification of critical factors resulting from the survey, a questionnaire was created. Twenty-five questionnaires were sent to enterprises in the Northern Region Industrial Estate area of the Lumphun province, Thailand. Thirteen enterprises responded, a response rate of 52%. The respondents were at managerial level positions, including managing director, division manager, and production manager.
The manufacturers were electronics, jewellery, mechanical parts and components, food and garment industries. The proportion according to the type of industries is shown in Figure 1.6.

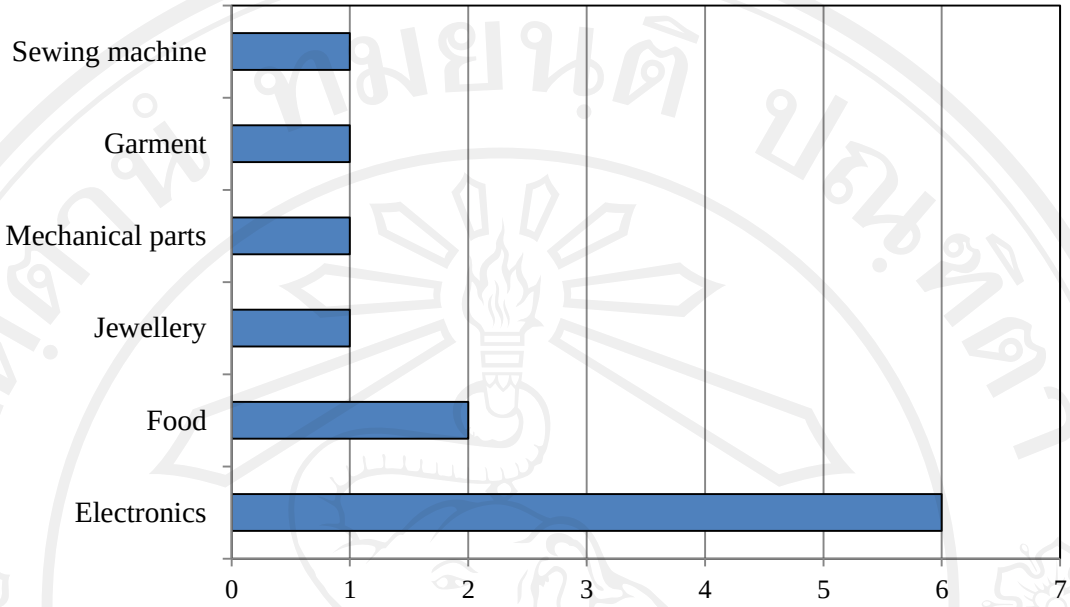


Figure 1.6 Percentage of the types of industries responding to questionnaires [Northern Region Industrial Estate Office 08]

There are two parts in the questionnaire. The first part aims to distinguish influencing factors which lead to each FDIs'characteristic: relocation, transferring and divestment scenarios. The second part is to evaluate the risk value by weighting the impact and occurrence of relevant disruptions leading to those three characteristic of plants. The second part of the questionnaire will be discussed in detail in Chapter 3.

The questionnaire shows that the major respondents were from European countries which are French, German and Swiss companies. Others were Japanese, Thai-American, American, and Thai-Japanese companies. All those companies, (except a German company who located the main factory as headquarters) retained the headquarters in their own countries and operated factories in this area. 46% of the entire respondents are from electronics components companies, whose characteristics attracted FDIs investment.

In the first part of the questionnaire, the influencing factors leading to each FDIs' characteristic can be distinguished, the factors in which the respondents believe as important for investment's decision were found by weighting the percentage. Finally, the four major aspects of financial situation, worker skill and performance,

supply chain and infrastructure are shown as the necessities. The percentage of four major aspects of influencing factors on investment decision is illustrated in figure 1.7.

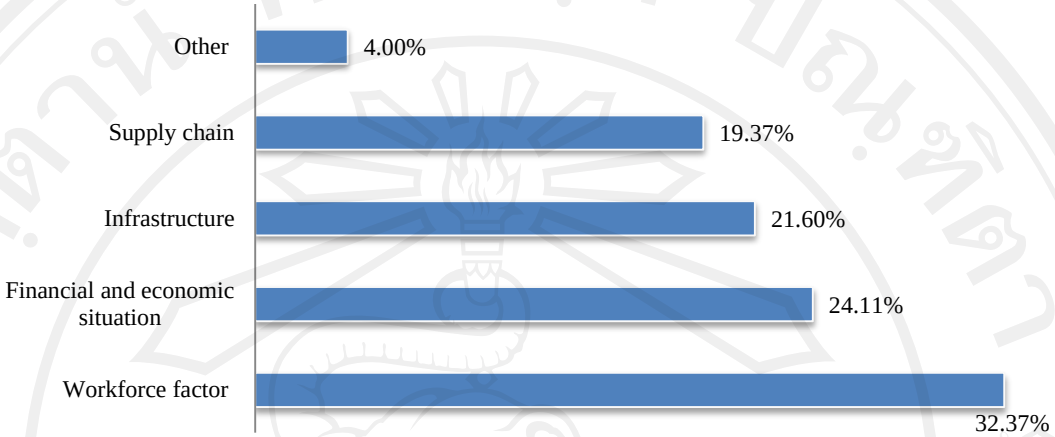


Figure 1.7 Percentage of four major aspects of influencing factors on investment decision

Consequently, the four influencing factors on investment decision can be divided roughly into the following three groups:

Factor 1: Financial situation

Financial situation can be described as the situation affected by financial problems. Unstable economic conditions such as inflation, interest rates, growth in gross domestic product (GDP), as well as monetary and fiscal policies are important [Root and Ahmed 78]. For example, exchange rates can have marked effects on a company's operating profitability and debt burdens and may therefore be influencing factors when making investment decision. The extent of this influence will depend on the country, economic and exchange rate policies [Campa 93], whereas, unstable political situation and unattractive regulations are also taken into consideration in this area.

Factor 2: Supply chain and Infrastructure

Good infrastructure increases the productivity of investments and therefore stimulates FDI flows. Physical infrastructure like transportation and distribution, technology and telecommunications has a positive impact on a firm's ability. The collaboration among partners in the supply chain network also helps to enhance the

effective interaction and handle potential disruptions before this occurrence. The need for proximity of a calibration centre is required, and this centre is an important factor, even though most manufacturers have their own research and development centres located at their headquarters. In terms of logistic networks, the outbound logistics; for example, land and air freight are major factors commonly used for transportation route. In addition, the need for telecommunication such as a leased, Asymmetric Digital Subscriber Line (ADSL) or Wireless Local Area Network (WLAN) and supporting infrastructure cannot be disregarded.

Factor 3: Worker skill and performance

Workforce factor refers to variables such as work ethic, attitude and labor conditions that are usually deemed important by firms, e.g, cost of labor and skills performance. Competency and skill-based requirements are the crucial factors required to improve knowledge worker's performance. Empirical investigations found that the cost of labor might be a more significant consideration for industry sectors, however technical support, skill-level and educational level in the workplace are also strongly required to improve knowledge worker's performance [Mzanda and Buys 06], [BOI 09], [Cheng and Kwan 00].

As noted above, the results of the questionnaire are congruent with the broad view of influencing factors from the survey of literature which are factor endowment, financial and economic situation, and supply chain and infrastructure. Hence, these consequences help to reconfirm that the influencing factors used for FDIs' investment decision can be classified into three general aspects. The three aspects are:

- Financial and economic situation
- Supply chain and Infrastructure
- Worker skill and performance

Next, to consider the main aim of this research, the establishment of the key factors that describe each characteristic of relocation, transfer and divestment scenarios was set up. A rating scale from insignificant to catastrophic factors is suggested. Five parameters used on a scale from 1 to 5, indicating the opinion from respondents are shown in Table 1.7.

Table 1.7 Rating scale used to indicate the opinion from respondents

Descriptor	1	2	3	4	5
	Insignificant	Minor	Moderate	Major	Catastrophic
	Interruption does not impact	With minimal interruption	Some interruptions impact	Major impact	Significant effect

The key factors are considered corresponding to the survey of questionnaire. Table 1.8 shows the list of issues to analyze and their explainations.

Table 1.8 Issues to be analyzed from the questionnaire

Aspect	**Issue**
Financial and economic situation	- Financial problems such as the strong exchange rate of Thai baht, market risk etc.
Supply chain and Infrastructure	- Inefficient collaboration among company to supplier and/or customer such as supplier unreliability, inaccurate sales forecast of demand variation. - Difficulties related to internal operations such as operational and technical problem effecting product quality. - Unwelcome facilities, infrastructure and supporting environment, such as public utilities and inconvenient regulation for company. - Inefficient internal collaboration, such as over inventory, production cost, information breakdown. - Inconvenient logistics such as transportation channels for raw material and finished good delivery
Worker skill and performance	- Inefficient employees and lack of skill requirement - High turnover rate in human resources

The study then discovers the identified causes leading to divestment, relocation and transfer of plant. From respondent questionnaires, the outcomes have been compared via the three characteristics of plant and are shown in Figure 1.8.

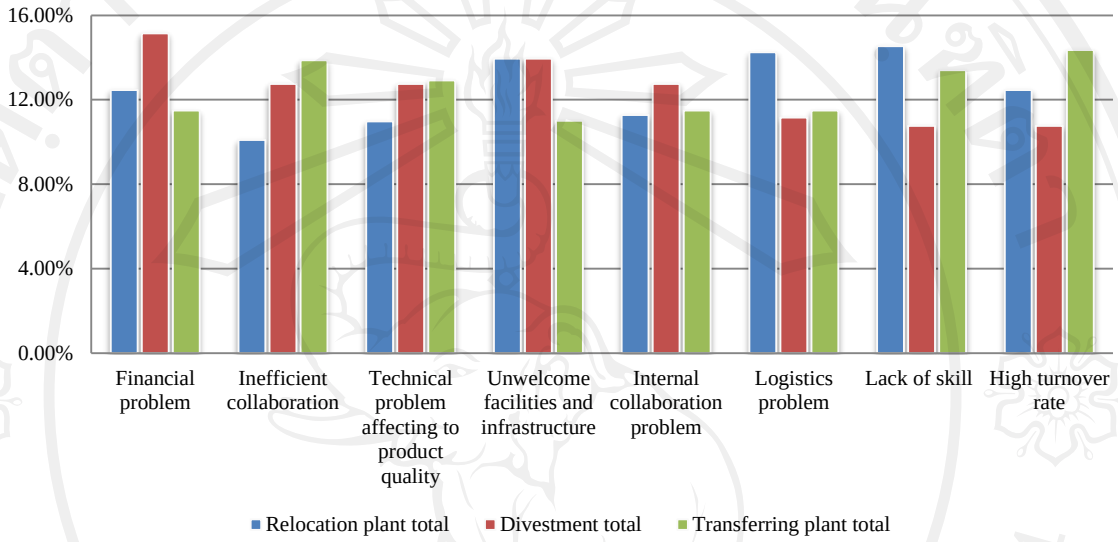


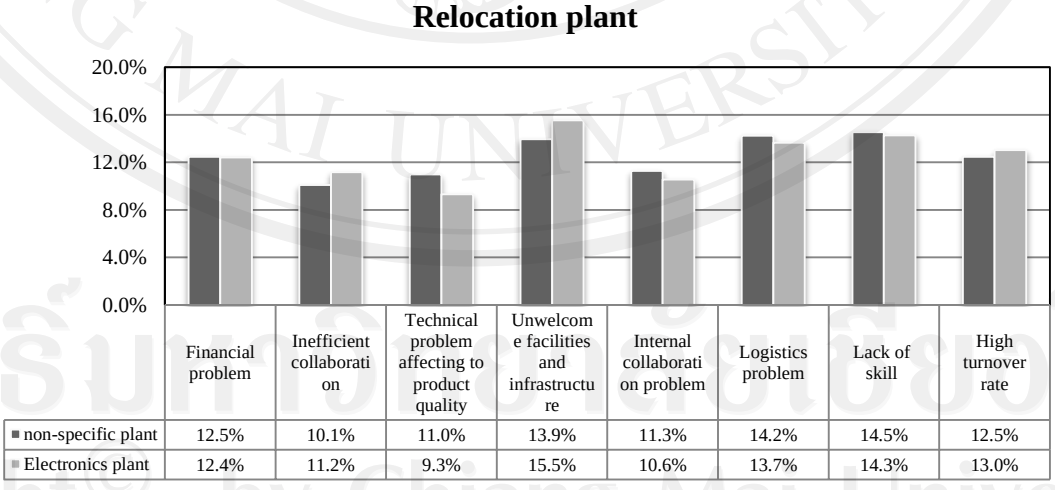
Figure 1.8 Comparison of causes leading to three characteristics of plant

In Figure 1.8, it can be seen that among all potential factors, a financial problem is the key issue leading to divestment of plant. Lack of skill is explained as a strong issue causing relocation of plant. For transferring plant, high turnover rate of employees is shown as the dominant criteria impacting the scenario. Nevertheless, several factors such as inefficient collaboration among partners, logistics problems are all relative key factors. Concerning other issues, this is summarized in Table 1.9. The table ranks the influencing issues among three characteristics of plants.

Table 1.9 Ranking the influencing issues among three characteristic of plants

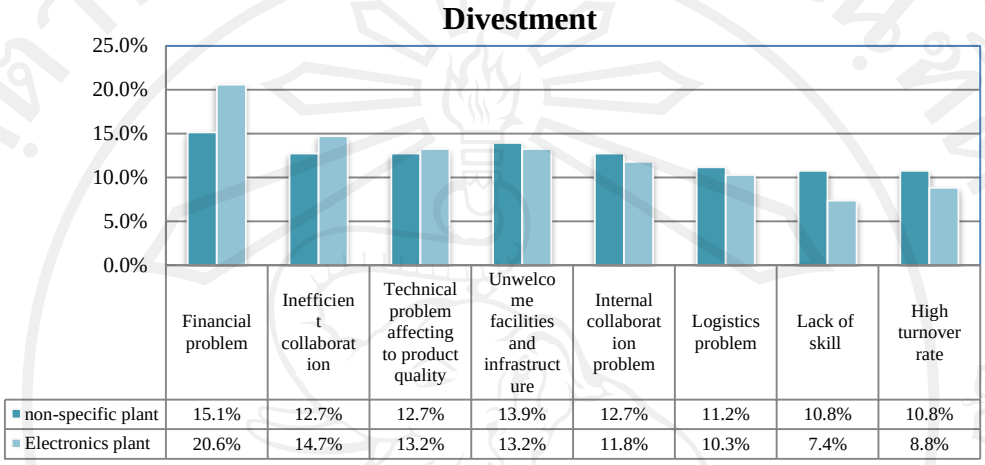
Issue	Ranking		
	Relocation plant	**Divestment**	**Transferring plant**
Financial problem	4	1	5
Inefficient collaboration	8	3	2
Technical problem affecting product quality	7	3	4
Unwelcome facilities, infrastructure and supporting environment	3	2	8
Internal collaboration problem	6	3	5
Logistics problem	2	6	5
Lack of skill requirement	1	7	3
High turnover rate in human resources	4	7	1

It is now useful to compare influencing factors between electronics and other sectors. This comparison helps to describe the dominant criteria affecting electronics manufacturing as illustrated in Figure 1.9.



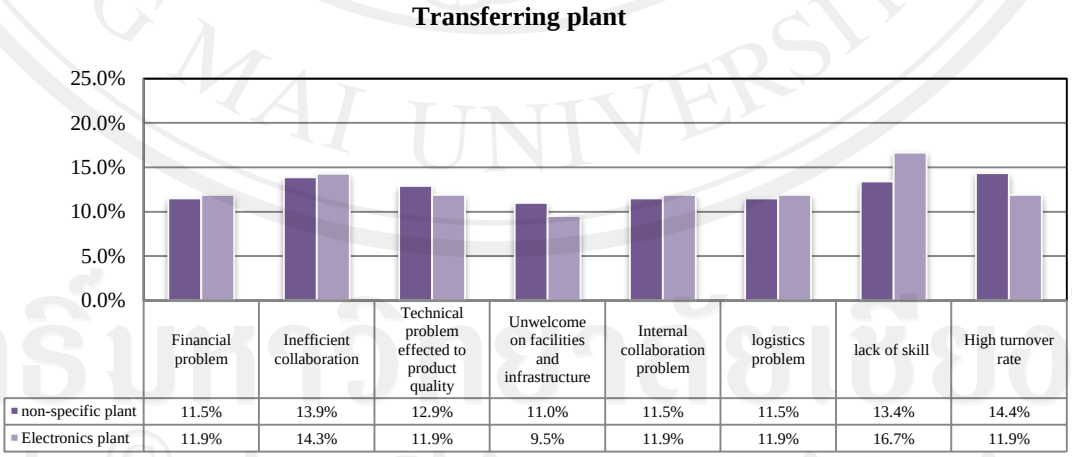
(a): relocation plant

As seen in the Table above, the unwelcome facilities and infrastructure such as public utilities and inconvenient regulation are shown to significantly affect relocation of plants. Lack of relative skills and logistics problem are also presented as a high percentage leading plant relocation.



(b): Divestment plant

The findings show that, financial problems such as the strong exchange rate of Thai baht, and market risk distinctively affect the divestment situation. Inefficient collaboration among supply chain partners and supporting facilities are also important as shown in figure 1.9 (c).



(c): Transferring plant

Figure 1.9 Comparison of causes leading to three characteristics of plant in electronics sector

From Figure 1.9(c), it can be remarked that the most significant factors impacting transfer of plant are a lack of skill, while the secondary indicator is inefficient collaboration among partners. Other relevant factors such as high turnover rate in human resources, financial, logistics network and internal collaboration problems are also factors.

Consequently, results from the first part of the questionnaire show the level of significant factors impacting divestment, relocation and transfer of plants. Thus, considering there three situations in the electronics sector, it can be noted that influencing factors of the electronics sector are not different from non-specified type of manufacturing. Finally, factors can be classified into three general aspects, i.e., the financial and economic situation, supply chain and infrastructure, knowledge and skill performance of employees.

From the analysis of literature and the survey on plant investment decisions, there is no single set of criteria to typify relations between characteristics of each decision and the influencing factors. The attributes applied in each research are different, even though the factors used to evaluate each type of decision are sometimes too broad. For example, some authors mention attributes which influence a decision in each type of situation, specifically the decision on production and manufacturing, for instance, supplies existence [BOT 07], [Viswanadham and Balaji 05], [Davis and Olson 08], [Sarker et al., 05], Supply chain risk [Viswanadham and Balaji 05], [Davis and Olson 08], [Sarker et al., 05], the criteria on economic development policy [Electronics Industrial Economic report], [Viswanadham and Balaji 05], [Davis and Olson 08], [Sarker et al., 05], supply chain cost [Electronics Industrial Economic report],[Bart and Henk 96], [Viswanadham and Balaji 05], and research and development support [Electronics Industrial Economic report], [Sarker et al., 05] which make it difficult to identify a single conclusion or remark of the difference among electronics sectors.

In this regard, an integrated framework is proposed to help manufacturers or foreign investors make a better decision on their investment. However, to prevent the unwelcoming situation of plant and sustain businesses, the identification of relevant

stakeholders who are associated with three main necessities of FDIs' investment is vital thus; those stakeholders will be identified as well as their main responses for businesses in the following section.

1.7 Key successful factors and their stakeholders to sustain foreign businesses

From the previous section, potential factors affecting the crises and FDI's investment decision are recognized for the study as key success factors to sustain foreign businesses. Regarding those discovered factors, the three relevant partners are involved, which are foreign investor, local industrial estate stakeholders, and managers in the companies.

The collaboration among those three partners is key to sustain and prolong foreign businesses to prevent the relocation problem. This section then presents how the three partners are relevant to the potential factors, and their objective functions. Finally, the problem of the study will be discussed.

To sustain and prolong foreign businesses, several factors on FDI's investment have been considered. The previous section referred to three potential factors. Thus, this study can identify influencing factors on based three main necessities. Those three factors are i) low cost of labor, ii) skilled labor requirement, and iii) supply chain and infrastructure effectiveness. Among the three potential factors (the government and private sector of Industrial Estate Authority of Thailand, foreign investor and manufacturer), responding stakeholders play a major role in creating and improving competitive advantage. In order to support and provide the competitive performance of the province, mutual understanding and collaboration among the three stakeholders will help to create many beneficial outcomes on manufacturing, e.g., the collaboration on information sharing of entrepreneurial investment among three stakeholders of investors, industrial estate authority of Thailand and manufacturers benefits for the overall partners. The use of Community of Practice (CoP) which is referred to "the process of social learning that occurs when people who have a common interest in some subjects or problems collaborate over an

extended period of sharing ideas, finding solutions, and building innovation" [Viswanadham and Balaji 05].

The information sharing provides among three stakeholders. For example, the analysis in financial-aspects of manufacturing investment provides supporting information for newcomers of foreign investors. The government and private sector can help to improve utilities and infrastructure of local industrial estates. Furthermore, in order to sustain manufacturing status, knowledge skill and performance improvement are necessities to operate in manufacturing.

- Government and private sectors (IEAT)

In terms of government and private sector, restructuring the industrial sector is necessary. The restructuring plan should include (i) the development of technology and research from existing knowledge to create added-value and increase the potential competition, (ii) the appropriate and effective environmental management for industrial sector, (iii) the improvement conditions for doing business, and (iv)the linkage among the up-stream, middle-stream and down-stream within and between industries. All factors will help to build potential and capacity of the Thai industrial sector for competitive advantage in the world market. The plan should aim to promote product development in terms of value creation to achieve the balance between economic benefit and environmental cost.

- Manufacturer

In case of electronics industries, the study area should be able to attract FDI investments by focusing on their strength of high product quality and skilled labor, which will contribute to higher competitive performance in the global market and create added-value for their own products. Supporting the innovation of research and development unit within the companies will help to create a body of knowledge as well as technology transfer via labors in the country.

- Foreign investor

As described at the beginning of the chapter, as far as manufacturing is concerned, profit is a key factor for foreign investors. Thus laws and regulations

related to finances of investment, tax, rate of exchange of the country become the key index driving the growth of economies, while, minimizing the costs and maximizing revenue to maximize profit.

In this study, these three stakeholders are the key partners to be successful on FDIs' investment of the country. However, those key partners are concerned with supply chain and infrastructure, knowledge and asset transfer, as well as cost of doing business. Thus to prevent business's crises, the integration of those key issues need to be considered for foreign investors or manufacturers who are willing to invest and gain more benefits.

1.8 Conclusion

As foreign businesses in the electronics sector face many critical challenges regards with to the increasing labor cost, supply chain and infrastructure ineffectiveness, high entries of new competitors to the markets, or even internal organization problems have caused the businesses slow down. This means new and existing foreign investors are reluctant to invest or expand the businesses. Regarding the case study in the Northern Region Industrial Estate, Thailand, earnings from industrial labor wage is a key factor to drive the province's growth. Moreover, the major type of manufacturing is the electronics industry whose effectiveness in supply chain and logistics are more beneficial to this sector.

As described at the beginning of the chapter, the structure of the electronics product's network is worldwide, since most electronics products from this area are directly exported to the parent companies or their affiliates. Besides, intensive labor is one of the main characteristics required for electronics companies. Thus, higher costs of labor in the province have lead to higher costs of production. For these reasons, the climates for doing business amongst high competition from neighboring countries may result in business relocation or plant closure. Consequently, the crises can affect people's income, as well as economic problems and finally lead to social problems in the province.

As mentioned before, supply chain and operational cost of doing business, the financial and economic situation, workers skill and performance are listed as the potential factors for FDIs' investment. There is no study regarding the integration of these three critical factors to support decision making for investment. Most of the research is mainly focused on the financial perspective of maximizing profits, while other potential factors of supply chain and infrastructure, as well as worker skill and performance, are controversial among the research. These issues have received attention. Thus, in this study, in order to propose a decision support system for investors or manufacturers, an integration framework is proposed of three potential factors corresponding to relevant stakeholders. The collaboration among stakeholders, namely foreign investors, the local industrial estate sector, and manufacturers are the key success factors for sustainable foreign business. Those three partners correspond to each potential factor, which influences the decision of FDIs. As previously mentioned, the potential factors refer to the "*cost of doing business*", "*supply chain and infrastructure*" and "*asset and knowledge transfer*" These three contexts are the main focus on the FDIs' investment decision which is also the main focus of this study. The research problems are explained as follows:

1. What are the potential factors used for making a decision while the FDIs are faced with crises of doing business?
2. How can the study provide or help the manufacturers make a good decision on their manufacturing crises?
3. In order to make a decision on relocation, transfer or divestment of plant, are there distinguishing factors among them to be considered?
4. How can relevant organizations and the government help to prevent the crises resulting from offshore or divestment plant?