A STUDY ON THE RELATIONSHIP BETWEEN COMPANY CHARACTERISTICS, DEMOGRAPHY OF ENGINEERS AND THEIR PERCEPTION OF THE AEC AND ITS ENVIRONMENT INFLUENCING THE DECISION TO DEVELOP THEIR FOREIGN LANGUAGE SKILLS, IN BANG POO INDUSTRIAL AREA, SAMUTHPRAKARN, THAILAND

CHAYA SUTTHIPORNPHALANGKOON

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE GRADUATE SCHOOL

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Abstract

The objectives of this study were to find the relationship between the company characteristics, demography of engineers and their perception of the AEC (ASEAN Economic Community) and its environment influencing the decision to develop their foreign language skills, in Bang Poo industrial area, Samuthprakarn, Thailand. The scope of this study was also based only on engineers who were working in Bang Poo industrial area. The study used quantitative research by distributing a structured questionnaire to collect data from 252 respondents. Both descriptive and inferential statistics were used to analyze the results of this research.

The findings from the descriptive analysis showed that the majority of the respondents were male and single. They were aged between 21-30 years old, holding a Bachelor's degree, working in a large company in fertilizer, paint and chemical product industries. They were mostly receiving information about the AEC through TV programs and the internet. The Five-level Likert scale were chosen to be used to measure the attitude on the perception of the AEC and its environment level and the decision making level.

The results of the hypotheses testing found that the demographic data and company characteristics had a significant relationship on the perception of engineers on the AEC and its environment. The perception of cultural diversity and perception of ASEAN MRAs on engineering services has some influence on decision making by engineers to develop their foreign language skills.

Keywords: Perception of the AEC, decision making, foreign language, Engineer

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Chaya Sutthipornphalangkoon

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CHAPTER 1
INTRODUCTION

This chapter presents the background of the problems, the main problems, the sub-problems, and the hypothesis, together with the significance of the study, the scope and limitations of this specific research project.

1.1 Statement of the Problems

"If ASEAN succeeds, it will be good for the region and the world."

(Dr. Surin Pitsuwan, 2008 : Online)

The ASEAN Economic Community, or AEC, was established from the ASEAN leaders in the ten member countries, which are Brunei Darussalam, Indonesia, Philippines, Malaysia, Thailand, Singapore, Laos, Cambodia, Myanmar and Vietnam to be stronger and more powerful in terms of economy. The ASEAN leaders adopted the AEC Blueprint in November 2007 with 176 actions with four implementation schedules for 2008-2009, 2010-2011, 2012-2013 and 2014-2015. They decided to create a scorecard for tracking the progress of each country to measure the achievement of milestones committed in the AEC Strategic schedule (Das, 2012 : Online). The goal of the AEC is to transform ASEAN into 'one vision, one identity, one community'. The AEC is characterized by four primary objectives:

1. Single market and production base
2. Highly competitive economic region.
3. A region of equitable economic development.
4. A region that is fully integrated with the global economy.

ASEAN members not only want a single market, but also a single production base which requires free flow factors of production such as capital and skilled labour (Nikomborirak, 2012).

Much has been said of Thailand as being far-reaching for the AEC. During the past two years (i.e. 2013-2014), the Thai government invested on an AEC campaign as much as 8 billion baht in various forms, in order to: "raise awareness and preparedness of Thailand and the Thai people for the AEC" (Chongkittavorn, 2014).

From the results of an ABAC Poll, 61.7% of people polled (aged 18 years old and over) believed that Thailand is ready for the AEC when it will be introduced in 2015 (POLLS, 2013: Online). The poll results also point out the fact that, of all Thai people, almost 40% are not and will not be ready for the AEC.

One of the goals set in the ASEAN Economic Community Blueprint is the free flow of skilled labour. The AEC will spread the way for the free flow of skilled labour in seven specific professions: doctors, dentists, nurses, engineers, architects, accountants, and surveyors. All of these professionals will be free to move to other ASEAN countries after the launch of the AEC in 2015, following a mutual recognition arrangement among the ten ASEAN member countries.

Many organizations in Thailand started to become active and are preparing for the feasibility of skilled labour from other ASEAN nations who will flow into Thailand. Ms.Banjongjitt Angsusingh, the director of the Bureau of Trade in Services and Investment noted that Vietnam has the most engineers, followed by Indonesia and Thailand. In fact, Thailand now represents only 0.25% of the entire ASEAN population. The weakness of Thai engineers is their lack of foreign language skills and they do not have knowledge about the laws and regulations in each ASEAN country. Therefore, with this lack of second language skills and lack of knowing of local rules and regulations abroad, there are not enough Thai engineers who are willing or able to work overseas.

The most serious concern in various relevant organizations in Thailand is the low level, or lack of, any second language skills. Thailand is an independent autonomy, and has been such a country since many years back. Until now, this independence, and having never been colonized, might have been good for Thai people in terms of freedom. However, if one compares Thailand with other ASEAN countries – especially Singapore and Malaysia – then the Thai population is clearly very far behind in their English language skills. The EF English Proficiency index separate the proficiency of English skills into five levels, from the very high proficiency level, to the very low proficient level (The world's largest ranking of English skills).

The Table 1.1 below shows the proficiency levels of English language skills in six of the ten of ASEAN countries.

Table 1.1 The ranking of English language skills

High Proficiency	Moderate Proficiency	Low Proficiency	Very Low Proficiency
Singapore	Indonesia	Vietnam	Thailand
Malaysia			Cambodia

Source: EF English Proficiency Index, 2014 : Online

From the Table above, Thailand is in the very low proficiency level of English skills. ASEAN uses English as the official language of communication, so this is a significant problem in Thailand. The lack of language skills could drag Thailand in to disadvantage situation in any future negotiations (The Nation, 2012:Online)

As the information was show in Table 1.1, the researcher found that not only Thai people in a general overview, but also in the education system, the standard of English language skills seems like Thai students are not even interested to improve their English language abilities either, besides the fact that they are not interested to study in a third language either. Even though the English language will be much more important as it will be the official language in ASEAN AEC integration in 2015.

Sakkarin Niyomsilpa (Bangkok Post, 2011) a demographic expert at Mahidol University's Institute for Population and Social Research (IPSR), stated that: "Thailand's weakness was its language limitations, especially in English. Filipino labourers could speak better English than Thais, giving them a much better chance of getting hired in other countries." He also added the point that the lack of attention or motivation to learn a foreign language by Thai students may make Thailand have no competitive advantages to Vietnam as a lot of Vietnamese could speak English or Thai language fluently. It is not only the factor of the Thai education system at stake, because Niyomsilpa also recognized that skilled workers who are working in mechanical, automotive, electronics, and petrochemical industries, should have more support from the Thai government, because there will be more competition among those industries when the AEC is initiated in the coming months (Buranasomphop , 2014:Online).

According to an in-depth survey by the University of the Thai Chamber of Commerce (UTCC), only 30% of engineers were knowledgeable about the upcoming

AEC, and only 10% of engineers thought that the AEC would be beneficial in their career paths. If Thai engineers do not improve their English language skills, they will not become comparable with people from Singapore and the Philippines, even in other areas of skills, as they will not be at the same high standards (The Nation, 2012).

As many as 90% of Thai engineers do not seem interested in the free flow of skilled labour in the AEC and also do not understand the regulation and laws clearly. This might be because Thai engineers do not want to work in other ASEAN countries or do not seek the opportunity in other ways, when working aboard (The Center for International Trade Studies, 2012).

Table 1.2 Current Registered Engineers on the ACPECC Database

	Country	**Quantity of registered engineers**
1.	Indonesia	260
2.	Singapore	218
3.	Malaysia	199
4.	Vietnam	113
5.	Myanmar	72
6.	Phillippines	38
7.	Brunei Darussalam	2
8.	Cambodia	1
9.	Laos PDR	0
10.	**Thailand**	**0**

Source: The ASEAN Chartered Professional Engineer Coordinating Committee (Feb, 2015)

From the ASEAN Chartered Professional Engineer Coordinating Committee (ACPECC) recording about the registered number of the ASEAN Chartered Professional Engineers in all countries in ASEAN is shown above, in Table 1.2. Thailand and Laos PDR are on the same level which was the last rank in the list, with having not one engineer registered with the ACPECC. It is very clear that Thailand is so far behind the other ASEAN member countries, especially Indonesia, Singapore and Malaysia (ACPECC, 2014). This might reflect the unawareness on the AEC by Thai engineers. Even though the Thai government and many related organizations are trying to support and distribute knowledge to Thai people, but it seems like not enough is being done.

Today, Thai engineers in all the industries face the reality that they are going to be challenged for their jobs and their livelihoods by English-speaking immigrants from Singapore, Malaysia, the Philippines and the other ASEAN nations where English language abilities are better than in Thailand (Buranasomphop, 2013).

From the research topic "The perception on opening Asean Economic Community of Thai Government in working people in Bangkok" the study examined the personal factors, learning factors and the relationship between economic growth with the perception of the AEC by the people in the Bangkok area. The results showed that the learning factors, government policy and economic growth had an effect on the perception of the AEC (Luengbootnak & Watcharpong, 2012).

Most of the research projects from many years back have mainly focused on the Thai education system that effects the ability of learning English language skills in Thai students or the preparation of Thai students for the upcoming AEC 2015. Nevertheless, the AEC will not have an effect only on students, but the whole ASEAN population will also be directly or indirectly effected from this integration too.

Somehow, the environment around Thai engineers may have influenced with their perception of the AEC. Results from many previous studies or polls have highlighted that a large percentage of Thai people are not ready for the AEC because they have not received enough knowledge or background information about the AEC, besides the fact that they are also not interested to learn about it either.

The researcher in this specific project realized that engineering is one career that will be highly affected from the AEC because engineering is one of the seven specific professional careers that have been offered the possibility to travel and work across all ten of the ASEAN countries. From many polls, the results and many sources as mentioned above, have emphasized the point that English is the official language for the AEC, but Thai engineers still have a very low proficiency in English skills which could well prove to be a potential risk for some to lose their job. Thai engineers may deal with both crises and opportunities when the AEC is implemented. An engineer needs to improve their foreign language skills for taking more competitive advantage in a global view and also to increase good opportunities to work overseas.

However, even many articles, websites, and other secondary data or many related organizations in Thailand have focused on the weakness of Thai engineers, but

there has, so far, been no any study or research project which points out the main variables that affect the problem of engineers to develop their foreign language skills. Therefore, from the previous research which was involved with the AEC and the decision to develop foreign language skills from any specified population, some have studied on the engineer's perception in another area. The researcher chose to study in more detail from the background (Demographic Data) of engineers, and the researcher realized that the company characteristics might relate with the individual perception of the AEC and its environment. From the personal background, the company characteristics and the perception of the AEC, all of those variables may influence the decision making of an engineer working in the Bang Poo industrial area in Thailand.

If this research can find some relative or some influencing factors between these variables, it will be possible to find the ways to improve the language skills for Thai engineers in Bang Poo industrial area towards the right direction, in the immediate future.

1.2 Objectives

The ASEAN Economic Community is rapidly approaching, to begin in 2015. Engineering is one of the seven major professionals which have the feasibility to work in other ASEAN countries, besides skilled labour in other ASEAN member staes, which have the possibility to work in Thailand too. From the statement of the problem it will be possible to see the importance of a foreign language that might have an impact on Thai people, and especially engineers. The main objectives of this research was to find the relationship between the basic background of engineers and the perception of the AEC which might influence the decision making to improve the engineer's foreign language skills.

1) To identify the relationship between the demography and the perception of an engineer of the AEC and its environment.

2) To identify the relationship between the company characteristics and the perception of an engineer of the AEC and its environment.

3) To identify the influence of the perception of an engineer of the AEC and its environment and the decision making by an engineer to develop their foreign language skills.

1.3 Significance of the Study

The ASEAN Economic Community (AEC) is leading many activities to achieve the target to be an integrated community, which means a single market of the ASEAN region. Therefore, the market will be widespread connecting up to 600 million people around the ten ASEAN countries. However, the topic in this research focused on the free flow of skilled labour, with the engineering services being one of them. The career challenge is not too far ahead, which is opposite to what most of the Thai engineers had previously thought (Runckel, 2012).

All ten of the ASEAN member countries have agreed to use English as the officially language for communication, as H.E. Le Loung Mihn, Secretary-General of ASEAN in 2013 declared: "With the diversity in ASEAN reflected in our diverse histories, races, cultures and belief systems, English is an important and necessary tool to bring our Community closer together" (Oxford Knowledge Centre, 2015:Online)

The Thai engineering job market will be more challenging from other ASEAN member countries and Thai engineers will have more opportunities to working overseas too. This research project will aim towards finding a relationship between the demography of engineers, company characteristics and the perception of engineers in the Bang poo industrial area of the AEC and its environment that influences with their decision making to develop learning foreign language skills. The results from this research can be adapted and be useful in terms of human resource development or could be used in terms of analyzing organization behavior.

1.4 Scope and the limitations of the study

1.4.1 Scope of the study:

This research used quantitative methodology by undertaking a survey to collect data from representative samples. The focus group in this research was Thai engineers who were working in the Bang Poo industrial area in the IEAT free-Zone and general industry zone located in Samuthprakarn province of Thailand.

The survey was divided into four parts, to collect data in four specific areas, namely: 1) demographic data; 2) company characteristics data: 3) individual perception of engineers of the AEC and its environment; and 4) the decision making to develop the engineer's foreign language skills. For the sampling method, the

researcher chose the stratified sampling method. Data collection in this research was undertaken by using two types of data: primary data and secondary data.

1.4.2 Limitation of the study:

As the focus group in this research project was engineers who were working in the Bang Poo industrial area therefore, the number of engineers in this industrial site location had no details recorded to be found. As noted earlier, this research scope only included Thai engineers who were working in the Bang Poo industrial area in the Samuthprakarn province of Thailand.

This research project also had a limitation of time period for it to be competed, so there could be a lack in some details, such as the collection data procedure, because the researcher needed to cooperate with the human resource development in each company to make the connection with the representative sample. Therefore, some companies were very willing to offer their time, but some companies did not willingly participate.

The previous studies about the AEC topics were not extensive to focus on comparing it with other topics. Most Thai people are still unaware of the upcoming AEC in 2015, so this was why it was hard to find any previous research which was directly involved with MRAs (Mutual Recognition Arrangements) in professional services or the AEC and its environment.

1.5 Conceptual Framework

This research studied on relationship between demography and the company characteristics of engineers in the Bang Poo industrial area that may be related with the individual perception of the AEC and its environment. It also aimed to study the influence on the individual perception of engineers of the AEC and its environment that may lead to the decision making to develop their foreign language skills of engineers in the Bang Poo industrial area. The researcher shaped the whole concept of this research area in Figure 1.1 below.

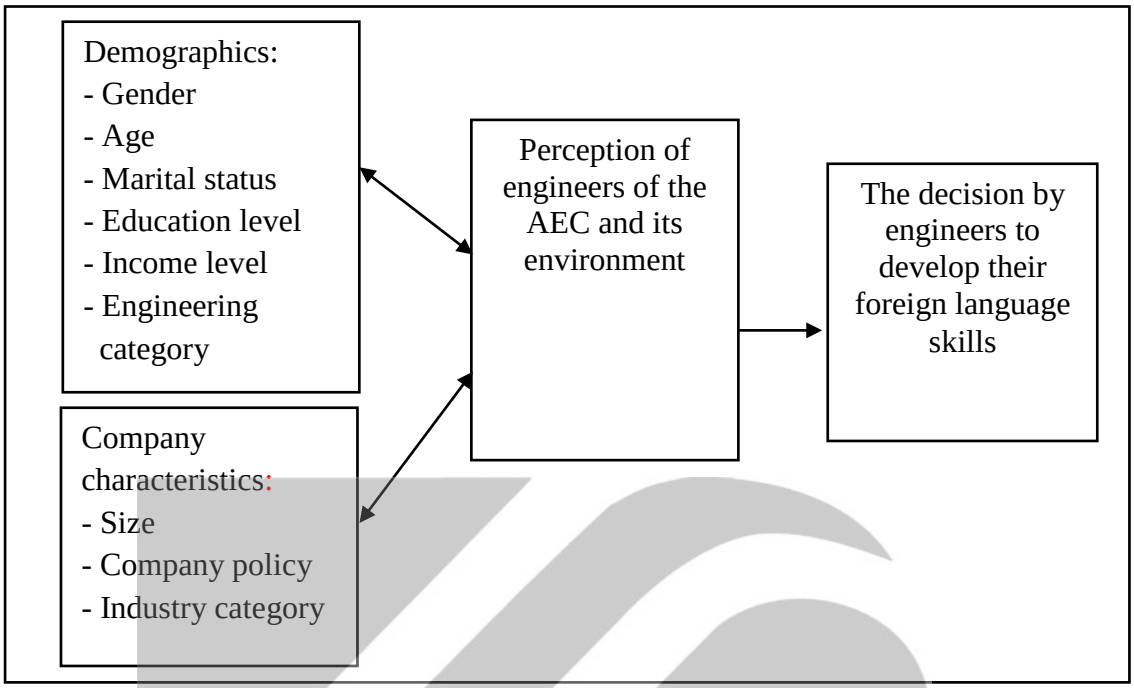


Figure 1.1 Conceptual Framework of a study on the relationship between company characteristics, the demography of engineers and their perception of the AEC and its environment influencing the decision to develop their foreign language skills.

Source: Adapted from Joungtrakul, 2012, Luengbootnak & Watcharpong, 2012, Pudthum & Sutamuang, 2013

The conceptual framework was adapted from several previous studies. The independent variables which show demographics and company characteristics are adapted from a previous study topic: "Readiness to cope with the free flow of skilled labour in the ASEAN Economic community of engineers in electronics and computer companies". Therefore, on the perception part, details were adapted from the research topic: "Perception of a Group of Thai People on ASEAN Mutual Recognition Arrangement of Services Professionals" and also from the research topic: "Perception of opening the AEC by the Thai Government and working people in Bangkok".

1.6 Research Hypotheses

Hypothesis testing is the process used to evaluate the strength of evidence from the sample and provides a framework for making determinations related to the population. The conceptual framework of this research was to show the relationship

between demography, company characteristics and perception of engineers of the AEC and its environment. Another part was the conceptual framework of influencing variables between perception of engineers of the AEC and its environment and the decision making to develop their foreign language skills. However, the conceptual framework may not show all the entire related variables due to the fact that the researcher having had a limitation of time to undertake the research and data collection. It was considered more efficient to focus only on the variables which were shown in the conceptual framework to analyze the relationship and influencing elements and factors between them. The various hypotheses are listed in detail below:

H1; Demographics **have a significant relationship** on the perception of engineers of the AEC and its environment

H1a; Gender **has a significant relationship** on the perception of engineers of the AEC and its environment.

H1b; Age **has a significant relationship** on the perception of engineers of the AEC and its environment.

H1c; Education level **has a significant relationship** on the perception of engineers of the AEC and its environment.

H1d; Income level **has a significant relationship** on the perception of engineers of the AEC and its environment.

H1e; Marital status **has a significant relationship** on the perception of engineers of the AEC and its environment.

H1f; The number of work experience **has a significant relationship** on the perception of engineers of the AEC and its environment.

H1g; Engineering category **has a significant relationship** on the perception of engineers of the AEC and its environment.

H2; Company characteristics **have a significant relationship** on the perception of engineers of the AEC and its environment.

H2a; Size of the company **has a significant relationship** on the perception of engineers of the AEC and its environment.

H2b; Industry category of the company **has a significant relationship** on the perception of engineers of the AEC and its environment.

H2c; Company policy **has a significant relationship** on the perception of engineers of the AEC and its environment.

H3; Perception of engineers of the AEC and its environment **has an influence** on the decision making by engineers to develop their foreign language skills

1.7 Basic Assumption

Demography is a study about a population. Many research projects found demographics have an influence on human behavior. In this specific research project, the researcher studied about engineers who were working at Bang Poo industrial area and chose the main topics of demographics that might be related to the perception of an engineer of the AEC and its environment. Differentiation of age had an effect on the perception of engineers of the AEC and its environment. Differentiation of gender had an effect with the perception of engineers of the AEC and its environment. Therefore, both males and females generally tend to have different decision making patterns. For example, most females strongly use emotions which is quite the opposite on how males decide, as they usually make a decision based on logic more than what females do. Differentiation of individual education level has an effect on one's perception, in terms of the person's intellectual level. A person who is more educated generally tends to be more prepared for any activity that might influence their career path. Differentiation of the income level has an effect on the perception of an engineer of the AEC and its environment, especially in terms of the ability to be open to new information and the ability to increase their knowledge. Differentiation of work experience may include the work place and the people surrounding each other as colleagues. If someone is working in a place where everyone is enthusiastic in the upcoming AEC, then they will normally receive all the relevant information automatically.

For a company characteristic in this research, the researcher decided to pick on only some main topics which tend to relate directly with the perception of engineers of the AEC and its environment. This included the size of the company. The researcher believed that the size of a company has an affect on the perception of the employee, and not only for just the engineers. This was because if they are working in a huge

company this would mean that they will face a lot of competitors for the same position and so on. The company itself will also have either several or many competitors in the global market, because the AEC will provide more challenges. Concerning the company policy, some work places have options for their employees such as offering a reward or promotion if they have specific knowledge which is important for the organization. In this case, the researcher selected the company policy to be one of the topics that might be related with the perception of an engineer of the AEC and its environment. For the industry category, Thailand has various kinds of manufacturing companies, including food products, electronics, the car industry and more, therefore the type of industry might influence the perception of employees in their area, if it is in the same field of work. For example, the AEC will launch with the improvement of all kinds of infrastructure, so this might affect the people who work in the construction field, who will be more alert and have a lot of opportunities to grow.

As mentioned previously, demography and company characteristics are both important and tend to be related to the perception of an engineer of the AEC and its environment. The perception of an engineer of the AEC and its environment might influence the decision making to develop their foreign language skills. It is necessary that, before people make a decision, they must identify the problem first. This state of mind needs the perception of the AEC to know the influence of this activity because if engineers do not know the challenge of the upcoming AEC, that might negatively affect their future career. They will not make the decision to develop their foreign language skills and then probably lose out on some potential future opportunities offered with work within the ASEAN region.

1.8 Definitions of Terms

AEC is the acronym for 'ASEAN Economic Community.' The ASEAN Economic Community will be established from the ASEAN leaders, from ten countries which are: Brunei Darussalam, Indonesia, Philippines, Malaysia, Thailand, Singapore, Laos, Cambodia, Myanmar and Vietnam. The arrangement of the AEC is to be the regional economic integration.

MRA is the acronym for Mutual Recognition Arrangement**.** A Mutual Recognition Arrangement is a proposed arrangement between ASEAN member

countries designed to support the freer skilled labour and employment of qualified and certified personnel among the ASEAN member countries.

Engineer is a person who plans and understands the making of machines, roads, bridges, harbours, etc. (Randolph, 1978)

Bang Poo industrial area is an industrial area established in 1978 with the operating establishment over more than 350 factories. It is located in Samuthprakarn province, Thailand (Bank Poo Industrial Estate, 2013:Online)

Demography is studying about the science of populations. Demographers have the main duties to understand a population's dynamics by investigating three main topics: birth, migration and aging. All of the three major topics are the potential reason that makes a population change (Max Planck Institute, 2014)

Perception is the experience people have after the human brain assembles and merges thousands of individual, meaningless sensations into a meaningful pattern or definite scene. Somehow, a person's perceptions are usually changed, disposed, coloured, or twisted by personal experience. Therefore, perceptions are a subjective and personal explanation of the real world from an individual point of view (Plotnik, 2008).

Decision is the act or process of deciding (Merrium Webster dictionary, 2015)

Poll is a sampling or collection of opinions on a subject, taken from a random group of people for the purpose of analysis (Lexico Publishing, 2015)

The ASEAN Chartered Professional Engineer (ACPE) is a Professional Engineer who holds the nationality of an ASEAN Member Country and meets the Council of Engineers (COE)'s regulation for registration as an ACPE in Thailand**.** The formal professional qualification is issued by the ASEAN Chartered Professional Engineer Coordinating Committee (ACPECC, 2014)

Stratified sampling is a one form of the probability sampling method which is when the researcher divides the whole target group into strata of different sub-groups (Explorable, 2009)

CHAPTER 2
LITERATURE REVIEW

This chapter is a summary of all the relevant academic and non-academic literature and previous studies that are involved with or related to this research topic. This chapter presents an overview of some previous work on related topics that provides the necessary background for the purpose of this research. The literature review concentrates on a range of ASEAN economic community topics and the area of foreign language skills. This chapter is divided into eleven parts, as follows:

2.1 Demography Theory

The Max Planck institute for demographic research (Max Planck Institute, 2014) explained that demography is about the science of populations. Demography is studying about the science of populations. Demographers have the main duties to understand a population's dynamics by investigating three main topics: birth, migration and aging. All of the three major topics are the potential reason that makes a population change.

Thomson E. (2007) described demography to mean something not far from the Max Planck institute. She suggested that demography is a study of a population, to learn about the size, the factors and can describe the basis of general demographics by age, gender, family, and household status. Demography has three main focus points:

1) birth; 2), migration; and 3) death. In terms of a population's social and economic factors, these can be defined by ethnicity, religion, language, education, occupation, income and wealth. The complication of studying a population is that it has many levels: local, regional, national, global, political, economic and geographic. Demography is a crucial part for understanding social and economic issues and can also investigate potential solutions. Demographics are associated in social planning, economic development, market research, insurance forecasting, labor market analysis, and so on.

Chaiwat Punchapong (Cited in Jampathong, 2010) described the meaning of demography in almost exactly the same way as Elizabeth Thomson. He also mentioned that the word "demo" means "people" and the word "graphy" means "description", therefore the word 'demography' is very close to be mean a study about a human population.

Benjarongkij Y. (Cited in Jampathong, 2010) described the concept of demography theory as using the logic principle which means the human behavior is urged forward by external forces. Benjarongkij also mentioned that people who have different backgrounds will have different behavior patterns. This concept is also related to the social categories theory by Defleur and Bell-Rokeaoh (1996). Defleur and Rokeaoh explained about human behavior, in that mostly, people will usually interact with the people who are in the same level of society, or have a very close background which connects them.

Parama Satawaytin (Cited in Jampathong, 2010) separated the qualification of demographic characteristics such as age, gender, social status, economic status, education, religion, marital status, etc. All of these demographic characteristics have influence with the senses, interpretion and a person's individual ability to perceive information.

Gender – male and female are different in terms of physical, aptitude, inner thought, emotions, etc. Researchers have used brain scans and found the differences in the structure and function of male and female brains, such as the different way of solving problems, different emotional memories, different body movements and coordination (Plotnik, 2008).

Age – This is one of the factors that influences human behavior. It is not only due to the physical changes, but older people have more experience than younger generations.

Education – education differences is one of the factors that influence factors that relate to attitude, mindset, ideals, perception, etc.

Socio-Economic Status – people from a different race, family-size, occupation, and income; all of these factors have an influence with attitude, mindset, ideals, perception, etc.

Religion – has an effect with human behavior including individual attitude. Childs concluded that the religion influences on people in three ways which are morality, politics and economics.

Demography theory, as mentioned above, from a reliable source concluded with previous research, could be the guideline for this research. Therefore, demography is the particular characteristics of a population. A study of the relationship between demography and the perception of engineers on the AEC and its environments should be the first basic assumption that a researcher focuses on.

2.2 AEC

ASEAN is the acronym for the Association of Southeast Asian Nations. ASEAN was established on 8 August 1967 in Bangkok, Thailand. It first started with consisting of only five countries: Indonesia, Malaysia, Philippines, Singapore and Thailand. After several years Brunei, Vietnam, Laos, Myanmar and Cambodia decided to join ASEAN. Today, the ASEAN membership has ten countries (The Association Of Southeast Asia Nations, 2014 : Online).

The ASEAN members announced to form an ASEAN Community at the 9th summit in October 2003. The ASEAN Community has three pillars: ASEAN Political-Security Community, the AEC (ASEAN Economic Community), and the ASEAN Socio-Cultural Community (Nikomborirak D., 2012).

The ASEAN leaders adopted the AEC Blueprint on 20th November 2007 in Singapore with 176 actions with four implementation schedules focusing on the years 2008-2009, 2010-2011, 2012-2013 and 2014-2015. They decided to come up with a

scorecard for tracking the progress of each country to measure the achievement that they are committed to in the AEC Strategic schedule (Das S. B. , 2012).

The AEC is characterized by four primary objectives:

1. Single market and production base

- Free flow of goods
- Free flow of services
- Free flow of investment
- Free flow of skilled labour

2. Highly competitive economic region.

- Infrastructure Development

3. A region of equitable economic development.

- SME development in ASEAN

4. A region that is fully integrated with the global economy.

AEC Advantages to Thailand;

- Products and services in Thailand will largely expand from the present status to serve only 60 million customers to become approximately 600 million people throughout ASEAN (Thai-Norwegian Chamber of commerce, 2013).

- Gain more investment and trading activities in other ASEAN members due to easier and free movement (Buranasomphop D., 2014 : Online).

- Thailand will become a hub and also be the center of exhibitions, meetings, national conferences, telecommunication, as Thailand is located in the center of ASEAN. Tourism will have more opportunities to grow (Buranasomphop D., 2014 : Online).

- AEC will expand the movement of raw material which is good for Thai manufacturers for reducing the cost of production because Thai factories can import cheaper material from other ASEAN members.

- Infrastructure will greatly improve by becoming integrated to other ASEAN members and so the transportation around the region will decrease.

ASEAN will not only be a single market, but also a single production base which requires free flow factors of production such as capital and skilled labour. (Nikomborirak D., 2012). The AEC will spread the way for the free flow of skilled

labor in seven identified professions: accountants, doctors, nurses, dentists, engineers, architects, and surveyors.

This research project chose to focus on just one of the seven professions in the list which is engineering. The researcher began with a preparation of engineers which had three major challenging topics (Rattanaguonkangwa A. P., 2012 : Online);

1. English language – the official language in the ASEAN region is English.

2. Learn and understand the history and culture from other ASEAN member countries – Thai engineers should open their mind to working with engineers from another ASEAN country and understanding other cultures and history will decrease potential conflict in the work place.

3. Focus on Project based learning (PBL) – Most Thai engineers have studied in the old education system which means that some of them may have less fieldwork experience. They should be working as a team and keep improving their skills to be more competitive in the whole region in preparation to the free movement of skilled labour, especially in engineering services.

The ASEAN Mutual Recognition Arrangement on Engineering Services was signed in Kuala Lumpur, Malaysia on the 9th of December 2005 in English language. In detail, it was divided into eight articles as detailed below (The Association of Southeast Asia Nations, 2014 : Online):

Article 1 - this article is mainly about the objectives of this arrangement

Article 2 - this article is mainly about all of the definition in this arrangement

Article 3 - this article clarifies three main topics, as follows:

3.1 Qualifications to become an ASEAN Chartered Professional Engineer (ACPE)

3.1.1 Completed a bachelor of engineering degree or equivalent degree in the country of origin or host country.

3.1.2 Have an engineer license in country of origin which was issue by the Professional regulatory researcherity of an ASEAN member country

3.1.3 Engineers need to obtain practical knowledge and a great deal of experience which is more than seven years since graduation and having spent at least two years working in charge of significant engineering works

3.1.4 Follow the Continuing Professional Development (CPD) policy of the country of origin at a satisfaction level.

3.1.5 Earned certification from the Professional Regulatory Researcherity (PRA) of the Country of Origin and have no record which harms technical, ethical or professional standards.

3.2 ASEAN Chartered Professional Engineer (ACPE)

A Professional Engineer who has all the qualifications as mentioned above, and has paid the fees can register on the ASEAN Chartered Professional Engineer Register (ACPER). An ASEAN Chartered Professional Engineer (ACPE) should practice engineering only in the specific discipline or disciplines in which these professional engineers have decided to work in under this arrangement.

3.3 Eligibility of an ASEAN Chartered Professional Engineer (ACPE): This topic will provide information about a registered foreign professional engineer (RFPE) and explain about how an applicant shall submit.

Article 4 – This article mainly describes about the monitoring committee. The responsibility of the Professional Regulatory Authority (PRA) of each participating ASEAN Member Country, and the functions of the ASEAN Chartered Professional Engineer Coordinating Committee (ACPECC).

Article 5 – This article mainly describes the mutual exemption between ASEAN member countries.

Article 6 – This article describes the improvement of this arrangement. Any ASEAN member country has the right to request in writing any amendment to all or any part of this arrangement.

Article 7 – This article describes any dispute settlement, which was completed in Vientiane, in Lao, on November 29th 2004.

Article 8 – This is the last article of the arrangement has five topics as follows:

8.1 The terms and definitions and other provisions of the GATS (General Agreement on Trade in Services) and AFAS (ASEAN Framework Agreement on Services).

8.2 This Arrangement shall begin on the date of signature by all ASEAN Member Countries.

8.3 After this Arrangement starts any ASEAN Member Country which wishes to participate in this Arrangement should inform the ASEAN Secretary-General in writing of its effective date of participation.

8.4 From 8.3, any participating ASEAN Member Country shall notify the ASEAN Secretary-General in writing at least twelve months beforehand.

8.5 This Arrangement shall be deposited for safety with the ASEAN Secretary-General, who shall immediately provide a certified copy to each ASEAN Member Country.

From all AEC Theory, there will be a lot of challenges that Thai engineers will face and also with the opportunity to working aboard and expanding their career path. The important part which engineers should focus on are the differentiation of cultures, more competitors in their area of work, the legal regulations of each country, the mutual recognition on engineer services, and the last one is communication skills. This research project focused only on the perception of engineers in the Bang Poo industrial area on what might influence the decision making by engineers to develop their foreign language skills. The background knowledge about the AEC of each person was not equal, so this should be the significant factor that influences the individual perception of the AEC.

2.3 Perception Theory

PM Co group (Pisarkiewicz, 2013 : Online) described perception in terms of marketing as the process in which consumers interpret information or receive from the five human senses: sight, hearing, taste, smell and touch. Every consumer will receive the information by the physical characteristics of stimulation, the relative connection between the stimulation and the surrounding environment in each individual situation. Mostly, the consumer choses to be aware by their own personal experience.

Mead (Cited in Muangsilapasat A., 2011) described perception as a selection, organization and interpretation from sensation. The society system, traditions and the environment have a direct and indirect influence with personal perception.

Perception is the experience a person experiences after the brain assembles and combines thousands of individual un-explained sensations into a meaningful pattern or scene. A person’s perceptions are usually changed, understood, colored, or twisted by

personal experience. Therefore, perceptions are a very personal explanation of the fact from a subjective, individual point of view (Plotnik R., 2008).

There are five steps in forming a perception:

1. Stimulus; the first step before a person can experience the perception is stimulus or several stimuli from any change of energy around them such as the sound waves, light waves, etc. which are transferred to the ears, eyes, nose or mouth.

2. Transduction; from the first step, the energy will transfer to the human body sensory system. This step will change the stimuli into an electrical sign.

3. Brain: the sense organs will go to primary areas of the brain. The brain in the primary areas will change electrical signals from the previous step into sensations.

4. Brain: connection areas; this next step will change the meaningless forms bit of the senses from last step into the meaningful and recognizable image.

5. Personalized perceptions; this step is the last thing that influences a person's individual perception, because everyone has a different life experience. The perception will be distorted by one's own personal and subjective past experience.

Gestalt psychologists (Plotnik R., 2008) explained the rules of organization in their understanding. The human brain has a set of rules for organizing material and forming an individual perception. The Gestalt Principles of Perceptual Organization can be described in the six laws as are detailed below:

1. Law of Pragnanz – the first basic rule in organizing perceptions is picking out the object from its background. A familiar example of the law of Pragnanz is presented in Figure 2.1 below. One can see a black vase in front of the white background, but it is also possible to see two white faces as a figure and a black vase as the background. Sometimes the figure can be seen in the foreground and sometimes it can be viewed in reverse. The school of Gestalt believes that personal experience influences the person's individual perception of the figure-ground interpretation.

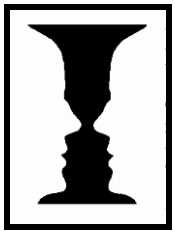


Figure 2.1 Figure-ground

Source: Bradley S., 2010 : Online

2. Law of Similarity – The human mind can automatically group together the similar elements such as presented in the image presented in Figure 2.2 below. When viewing this image, people will see two groups of circles that are separated as being dark colored circles on a lighter colored background.

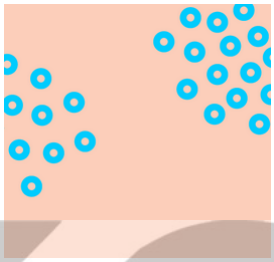


Figure 2.2 Similarity

Source: Bufardeci L., n.d. : Online

3. Law of Closure – people have a tendency to fill in any missing parts or any visible gaps in an image or a figure to make it seem complete. The Gestalt law of closure can explain why people can finish a puzzle or put together all the separate parts of a jigsaw. Figure 2.3 below is an example of this rule when people tend to build this figure to be a complete square, even though this figure is not fully complete and is clearly just four unconnected lines.

Figure 2.3 Law of Closure

Source: Bufardeci L., n.d. : Online

4. Law of Proximity – This rule, in organizing stimuli, relates to people who group together the objects that are very close to each other. The example in Figure 2.4 below presents an image where people will see two separate groups of circles. The relative closeness of the nearest objects is stronger than the similarity of whether they are all circles in one picture.

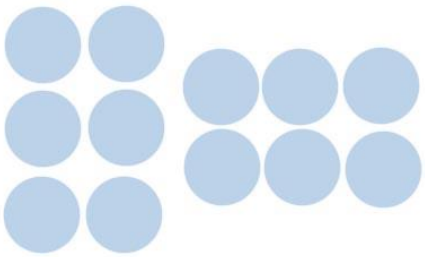


Figure 2.4 Laws of Proximity
Source: Bradley S., 2010 : Online

5. Law of Common Fate – This rule indicates that the moving objects in the same direction would be perceived as a separate group, as is shown in Figure 2.5 below. It is possible to see the dots have two moving directions: Two move to the north-east and three move to the south-west.

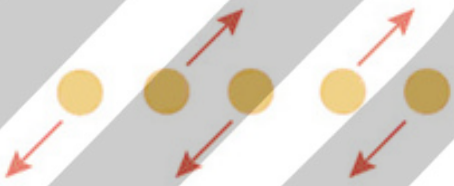


Figure 2.5 Law of Common Fate
Source: GollyGForce, n.d. : Online

6. Law of Continuity – In this rule people tend to witness and admire a smooth or continuous line when interpreting a set of dots lined out very close together, and the line separates to become two lines moving in different directions (Kator A., 2003).

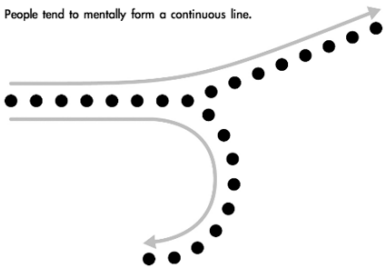


Figure 2.6 Law of Continuity
Source: Kator A., 2003 : Online

Factors influencing perception;

Patchanee Vorakawin (Muangsilapasat A., 2011) described the factor that influences perception in three parts:

1. Characteristic of the receiver – attitude, personality, ability to adaptation. These are all the qualifications of a receiver and this is a critical part of Implicit Personality Theory, or namely the "Halo Effect" which uses the personal experience and memory to interpret present day experiences, including a personal perspective from each person.

2. The readiness of perception – the readiness will happen before the sensations, and this will help a person to forecast and prepare themselves for the next state.

3. Stereotype – people always interpret and perceive things based on their attitude and personal popularity.

2.4 Decision Theory

Hansson S. O. (1994) described the decision theory as an understanding and explanation of how decisions are made. Decision theory is concerned with a goal directed behavior in the presence of options. The decision theory is the analysis of the behavior of an individual facing various situations, due to a period of time and the result one would like to perceive in the end. An uncertain situation is a natural event that a person cannot predict. Decision theory is used as a probability theory to be one of the decision maker's tools, which was developed in the 17th and 18th centuries by such notable researchers including Blaise Pascal, Thomas Bayes and Daniel Bernoulli.

Siriwan Sareerat (Cited in Lertprapaporn, 2010) described decision making as being the ability to choose the various choices which are expected to the most satisfaction results so, therefore, the person should position the problems as the first priority.

North D. W. (1968) suggested that the decision theory provides a suitable model for choosing between good or bad choices when the result from this choice would not be perfect. It is used in mathematics to analyze the reasonable access of assumptions and concepts of decision theory. The crucial part of making decisions is to stand with the uncertain part or parts of one's life. In the present day, people are

faced with rapidly changing technology and their living environment in terms of business. The one who has the responsibility to create the strategies such as a management team are regularly faced with a lot of decision making in many situations to deal with unpredictable problems.

The main factors that influence decision making are three main significant issues (Lertprapaporn, 2010):

1. The number of decision maker(s) – an individual or a group

2. State of the problem – structured problem, unstructured problem, or possibly a semi-structured problem

3. Decision level in an organization (Types of decisions made) – 1) Strategic decision; 2) Tactical decision; 3) Operational decision; In each level it depends on the person's individual responsibility and the employment position they hold, as indicated and highlighted in Figure 2.7:

Figure 2.7 Decision Level in an Organization

Source: Hussain F., 2012

– Strategic Decisions are made by the senior management team. This is one of the important parts for managing and creating the vision and mission of the company, the policy decision in the long term (Hamel, 2008 : Online).

– Tactical Decisions are made by the middle management team to find the way to achieve the target that has been set by the senior management team from strategic decisions and a less complex level on the medium term (BBC, 2014 : Online).

– Operational decisions are made by the junior management team. Decisions that are made are simple, daily and most of the decisions are taken repetitively (Chand S., 2015).

Under the pressure before a decision is made, the decision maker is faced with many conditions. The condition under the pressure that decision makers were facing into three conditions:

First condition: certainty means the alternative choice that a decision maker is used to and can predict the result after it is chosen. Most of the certainty condition is always found from a structured problem.

Second condition: risk means the alternative choice that a decision maker cannot guarantee the result and has only some limited information to make the decision.

Third condition: uncertainty means the alternative choice that a decision maker has no information at all and cannot predict the result.

The decision making processes is divided into five steps (Ingram D., n.d.) as presented below in Figure 2.8:

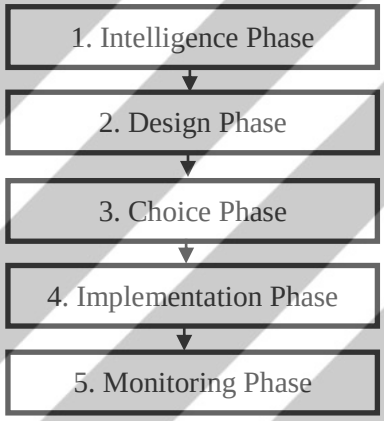


Figure 2.8 Decision Making Processes.

Source: Ingram D. , n.d. : Online

Decision Making Processes;

Step 1; Intelligence Phase – identify the problems

Step 2; Design Phase – create and analyze alternative choices. This step has three forms:

2.1 Model

2.2 Decision tree

2.3 Decision table

Step 3: Choice Phase – evaluating alternative choices from the previous step and choose the best one.

Step 4: Implementation Phase – launch the project that was chosen from the previous step to become solid.

Step 5: Monitoring Phase – evaluate the project. The results might be good or bad. This step helps to find the root-cause which has been a disadvantage with the result.

From the concept of decision making as was mentioned above, decision making comes from processing of predicting the satisficatory result of the decision maker. The best choice might give the worst result or the reverse, but the core of the decision making theory is how to identify the problem and analyze the problem with the reasonable method under the various situation. This research project aims to find the factos that influence an engineer's perception of the AEC and its environment to making the decision to develop their foreign language skills. The core of the perception theory mainly refers to the five senses of humans, beside the core of decision making which is mainly based on reason. However, both perception and decision making come from people. Perception might influence with decision making because external and internal factors are influenctial with the choice to make with the individual person's perception too.

2.5 Second Language Acquisition

Wood G. (2012) noted that the meaning of second language acquisition (SLA) is studying another language which is not the student's mother tongue. It is not just only the second language but also includes third and fourth languages. Wood also suggested that it is important to carefully describe the meaning between second language acquisition and foreign language acquisition. These two phrases are very close but this does not mean they are totally different. Foreign language acquisition is the study of a language inside a classroom or an education environment that is undertaken on purpose. For example, a Chinese student who learned English in the UK for the TOEFL (Test of English as a Foreign Language) test but, as mentioned before, in a broader definition the meaning of foreign language acquisition can include the second language acquisition (SLA).

Ellis R. (1997) highlighted the point that second language acquisition is often referred to as an L2. At a first review, the meaning of the phrase 'second language acquisition' seems clear and easy to understand but, truly, it needs a more detailed

explanation. The word ‘second’ can relate to any language that is learned after the mother tongue which means the learning of a third or fourth language. Whether a person is learning naturally by living in a country where other languages are spoken or whether they are learning a language in the classroom, all of these can be placed generically as being ‘second’ language acquisition. Ellis offered the same perspective as Gary Wood, that the meaning of second language and foreign language has no difference.

Second language acquisition has five phases of learning: Pre-production, Early production, Speech Emergence, Intermediate Fluency, and Advanced Fluency (Björk J. D., 2008). There are many factors that can influence the quick progress of students such as their level of education, their family background, and how long that they spend time in the country of the language they are learning.

2.6 Human Resource Development

Leonard Nadler was the first person who introduced human resource development in the USA in 1969. He described human resource development as a form of learning about how to organize in a specific time and the reasons why people’s behavioral patterns can change (What is Human Resource, n.d. : Online).

Mardsen Huggins S. (2015) argued that human resource development was to focus on how to increase the ability of employees in an organization with the combination of training and learning that might improve the potential future of employees. The goal of human resource development is to build the teams and departments which will show the result in a strategic advantage and increase the competitive advantage against another company.

Heathfield S. M. (2015) defined Human Resource Development (HRD) as the method or activity for helping employees develop their personal skills and organization skills, increase their knowledge, and abilities. Every organization has many opportunities and challenges to develop human resources, both within or outside the workplace.

Sirijantapun S. (1990) explained human resource development to be a process to develop employees in an organization in order to maintain and increase the knowledge and capability to meet the target of their company goals.

There are several ways to develop human resources. Some can be formal, such as training in the classroom, having specific training or informal approaches, such as a manager mentoring employees.

Why does a company need human resource development?

- A fast-changing environment
- If the ability of employees in an organization is low.
- Changing human resources to take on a different role;
  1. Change agent
  2. Create a learning environment that leads to a learning organization.

Peter M. Senge defined the five kinds of factors an efficient organization should have:

– Personal mastery
– Mental model
– Shared vision
– Team learning
– System thinking

The five characteristics that a learning organization must have are:

- Building the learning environment
- Restructure to suit with a learning environment
- Creating a system to a comfortable and learning environment
- Creating the opportunity for employees to develop themselves
- Maintain personal development to be creative

In present times, human resource development is one of the crucial keys to increase productivity, grow relations and increase the profitability for any company. Human resource development provides unlimited advantage to the concerned organization. For example, human resource development makes people increase their capabilities. Human resource development training offers new skills, employees gain new knowledge and the company gains a more positive attitude from employees. With the suitable HRD program employees will become more committed to their jobs. A surrounding work place with trust and respect can be created with the help of human resource development. With the help of the human resource development method, employees will be more encouraged towards change, and they will find themselves

improving their capability in problem solving. Human resource development also increases the team spirit in the organization. The organization culture will become more efficient. Employees will also feel more confident in their jobs.

Jerry W. Gilley, Ann Maycunich Gilley, and Steven A. Eggland found that organization development is one part of the human resource development matrix:

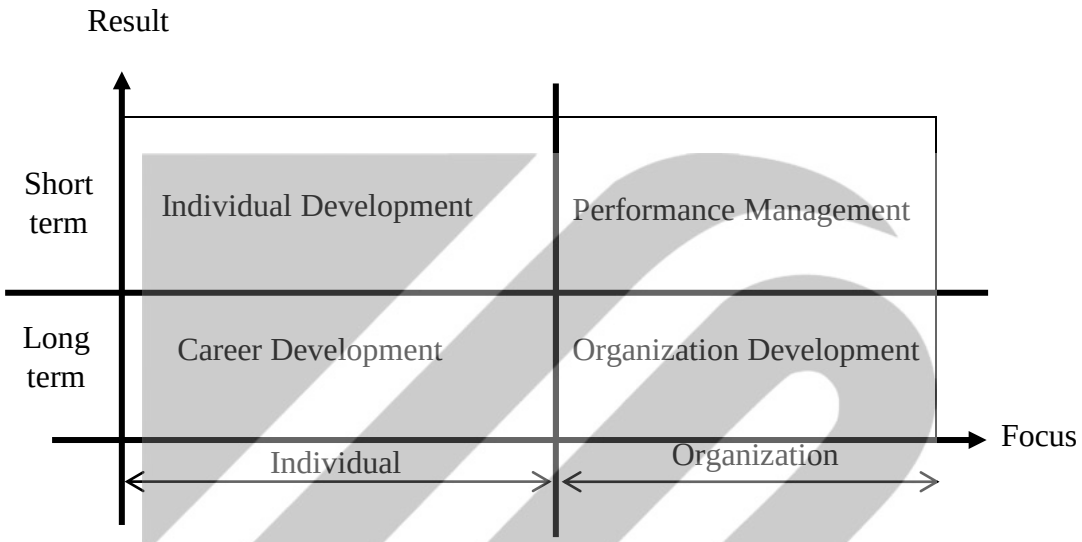


Figure 2.9 Human resource development Matrix

Source: Sirijantapun S., 1990

As noted in the matrix in Figure 2.9, human resource development can divided into four parts:

1. Individual Development – This part takes a short period of time to learning, training, and changing the employees' behavior. The goal of this part is to develop the current job by using the training method.

2. Career Development – This part takes a long period of time and the main result of this part is very close to individual development but this part are focuses on a future plan.

3. Performance Management – This part takes a short period of time but the result effects the whole organization leading to an increase in the ability of the entire company. There is also a guaranteed result of the employees having a positive learning environment.

4. Organization Development – This part takes a long term approach and the result has an effect over a long period of time, such as resolving the organization problems, maintaining the organization systems, maintaining the organization structure and creating an organization culture, building strategies including the managing process.

2.7 Organizational Behavior

Ashraf T. (n.d.) defined organizational behavior (OB) as a study of individual and group dynamics in an organizational setting, as well as the nature of the organizations themselves.

Lombardo J. (2015) explained the meaning of Organizational Behavior as a way of learning of both personal and group performance and operating within an organization. A study in the field of organization development is about human behavior in a work place and defines the effect on job performance, structure, empowerment, motivation, attitude, leadership, etc.

Bunn R. (2013) understood the word organization to be a group of people regularly working together to achieve common goals. They can be co-operated or a non-profit organization or family run. The organization behavior is the study of how people or group and structure affects the organization's behavior.

A study of organization behavior is becoming a more critical role as people with different backgrounds, different attitudes and also with team-work, which is fully hoped to meet high performance, whether the employees come from different cultures or not. Organization behavior aims to fulfill and understand all behavior in organizations to improve and develop the capacities and capabilities in the future. This knowledge might help to be used as a guideline to the way to develop for certain behaviors that do not meet the mission or the vision of the organization (Ashraf, n.d.).

Colquitt A. J. and team (2011) described the organizational behavior (OB) as a study to understand the individual and group behavior and is also a way of learning to improve attitudes in terms of individual and all groups in organizations. Organization behavior is different from both human resource management and strategic management. Mainly, human resource management takes some theories from organization behavior to be an application tool that is used in human resource

management. Therefore, it could be noted that organization behavior is a part of human resource management. The theories and concepts in organization behavior come from various kind of sciences, as Reeve Bunn (2013) revealed. Organization are actually assembled from four types of science: First, sociology – a study about people in relation to the social environment and culture. Second: psychology – mostly on an individual level of measure, and explaining. It is sometimes used to change human behavior. Third: social psychology – a study about people who might be influenced by one another. Fourth: anthropology – a research that helps to inform the study of organizational culture.

Due to organization behavior having a lot of topics and reasonable roots, this helps a researcher draw together the whole collection of theories in organization behavior. Colquitt A. J. and team (2011) created an integrative model, as presented in Figure 2.10 as follows:

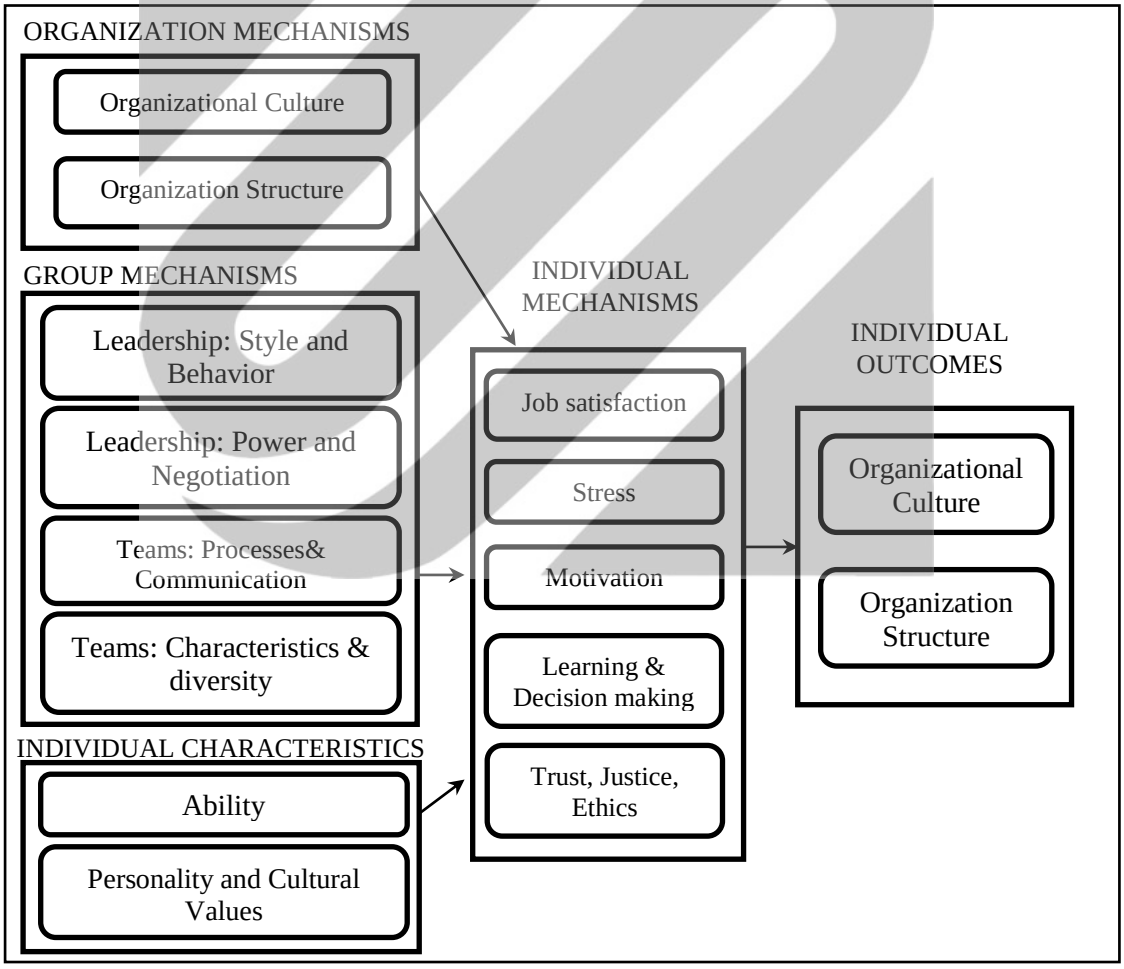


Figure 2.10: Integrative Model of Organizational Behavior

Source: Colquitt A. J. and team, 2011

The Advantages from studying Organization behavior (Malhotra J., 2009).

1. It helps people or groups understand their behavior, leading them to improve any weaknesses.

2. It is a good tool for managers in getting their work done effectively.

3. Organization behavior focuses on interaction and relationships between employees and organization behavior, so it makes people in an organization work with a more positive attitude.

4. It helps individuals and the organization to develop work behavior by increasing job satisfaction.

5. It helps in creating a motivational environment in the organization.

6. It helps in building heart-to-heart connections in group relations.

7. It helps to anticipate behavior and this can be adapted in a meaningful way that passes on effectiveness in the organization.

8. It reflects how effective the management of human resources actually is.

9. It helps to improve productivity, effectiveness, and overall efficiency in an organization.

2.8 External and Internal Environment

In the business world it is impossible to ignore change. Some organizations that do not make any adjustment for their business to move forward or make any surrounding changes, they are predicted to either fail or fade away on their own. Usually there is some event or some situation that happens to effect how the business operates, both in a positive or negative way. These situations that have an impact on business are called **'Environmental Factors'**. There are two kinds of environmental factors: first is the internal environment and second is the external environment (Mckinney P., 2015).

The internal environment is the event or situation that has a direct impact on the organization or a company (Sahi A., 2011 : Online). Every business organization has an internal environment, which has various elements within the organization. The main component parts of internal environment are: 1) employees; 2) shareholders and Board of Directors; and 3) culture (Emanagement, 2010 : Online)

The external environment includes all of those factors outside the organization that have an impact on the ability of the organization (Root III D. M. & George N. , 2015). External environmental factors are more of a risk for an organization because they are hard to predict and some factors cannot be controlled. It is very hard to prepare for. According to James Stoner, external environmental factors can be divided into two specific segments: 1) the general environment; and 2) a competitive environment (Gregory G.Dess & Team, 2012)

The general environment is a collection of factors that can have plenty of harvest on an organization process or strategy. The general environment can be divide into six segments, as follows:

a) Demographic segment – this factor is the most easy to understand. Demographics includes the age range of a population, income level, gender, level of education, etc.

b) Socio-cultural segment – socio-cultural forces influence the beliefs, personal values, and lifestyles of a society. For example, increased educational attainment by women in the work place.

c) Political/legal segment – Law or regulations can affect an organization in the high technology sector. For example, decreasing the number of temporary visas available for foreigners for high-skilled labour. Political processes influence environmental regulations with which industry must defer such as certain tax rates.

d) Technological segment – this factor can affect both the internal and external environments. Innovation can create an all new entire industry.

e) Economic segment – this factor has some influence with all industries. It starts from suppliers and goes right through to the customers.

f) Global segment – This factor is like the AEC, where Thai production can easily find the cheaper material from other AEC member countries.

The competitive environment is related to many factors that are an influence to an organization strategy, including existing competitors, potential competitors, customers, and suppliers. In terms of suppliers, this also means a supplier is considered to promote integration too.

To understand the business environment, the right method is to analyze the external and internal environment. The SWOT analysis is the most popular method to use for analyzing a firm and industry's conditions.

The SWOT analysis is a tool for understanding all kinds of any situation that may influence a project, product, place, organization or person (Rouse M., 2014). SWOT is an acronym that represents: Strengths, Weaknesses, Opportunities, and Threats. The SWOT analysis focuses on providing a good model for criticizing strategy, the mission and vision of an organization or business matter, or person (Chapman, 1995).

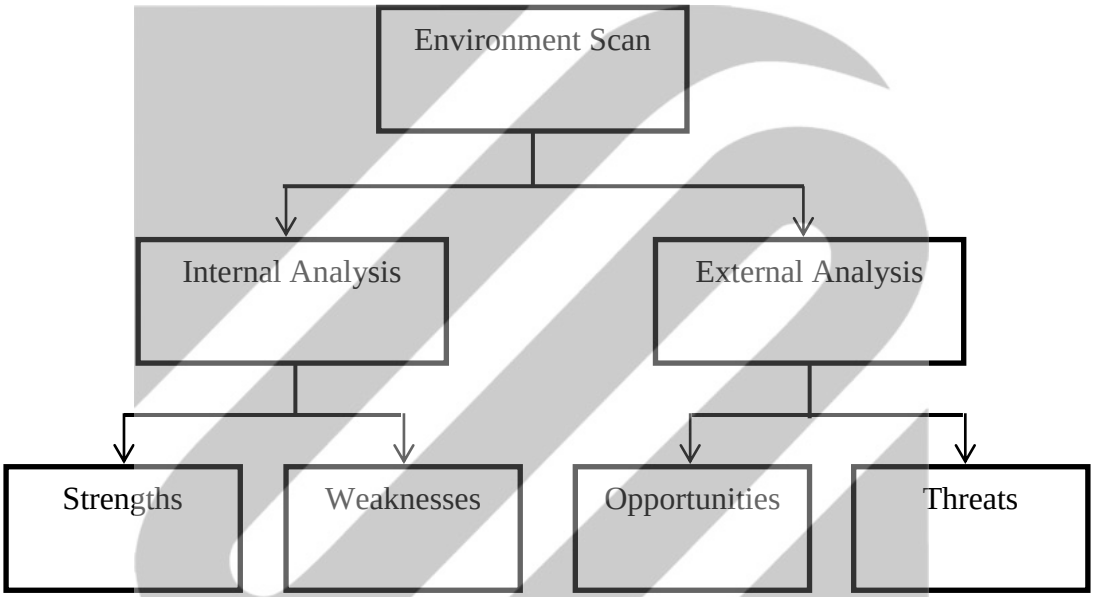


Figure 2.11: SWOT Analysis Framework

Source : Adapted from Discover Research Group, 2014 : Online

Strengths

Strengths are the positive characteristic including both tangible and intangible factors, which are mostly inside an organization. These factors are controllable. For example: the marketing area, finance department, manufacturing and organization structure. Strengths also includes the employees as their knowledge, profile, education background, and reputations. As mentioned earlier, strengths also mean the assets such as capital, credit, equipment, established customers, and other valuable resources within the company. Strengths collect all the positive aspects that are internal in an organization that make value added or increase the firm's competitive advantages.

Weaknesses

Weaknesses are the controllable factors within an organization. Weaknesses are things that decrease a business's abilities; i.e. the area that should be improved, such as employees who lack sufficient expertise or limited skills, the lack of resources, or lack of suitable technology.

Opportunities

Opportunities means the external attractive factors that reveal the reason for growth of the business. Opportunities might be the result of market growth, changing lifestyle, or future trends.

Threats

Threats means all the factors that have a negative influence to the business. Threats include uncontrollable factors that are a risk to the organization's marketing strategy. Threats include existing competitors or potential future competition and also includes material increasing prices by suppliers, economic downturns, government regulation, etc. (Berry T., 2014:Online).

Benefits of SWOT analysis

- To understand one's own business better
- Know the weaknesses
- Prepare for any threats
- Take advantage from the positive elements
- Develop the organization's goals and strategies and how to accomplish them.

Limitations of SWOT analysis

SWOT is only one phase of the business planning process, using only basic problems for any complex. A researcher will have to conduct far more specialist research or analysis to be able to make decisions (Queensland Government, 2014 : Online)

Limitation of SWOT analysis are as follows:

- It does not prioritize the issues.
- It does not show the solutions or provide the alternative decisions.
- Has a lot of ideas but does not indicate which one is the best.
- Haas a variety of internal and external information, but some is not useful.

2.9 Relationship between Variables

In engineering and science, this is usually straightforward as all parameters can be kept except the constant parameter and an engineer will study only how this parameter affects the result. Nevertheless, in social sciences, some parameters may be related or may not be directly related. There could be some indirect parameters deducing the cause and effect between the variables. When the change in one variable and causes change in another variable, this is a causal relationship. In other words, it is simply a correlation. A correlation does not imply causation. A correlation between variables can be negative or positive. Positive correlation assumes that an increase of one variable causes an increase in the other, therefore a negative correlation is the opposite, as an increase in one variable will affect a decrease in the other (Kalla S., 2011).

Cherry K. (n.d.) acknowledged that a correlation is the measurement of the relationship between two variables and also noted that the positive and negative correlation is very close to the meaning that Cherry K. provided: that the positive correlation is a relationship between variables, when one variable increases or decreases, the other will be change in the same direction. The negative correlation means an invert from a positive correlation. In both types of correlation, there is not any proof that changes in one variable causes any changes in the second variable. Correlation is used to find out whether there is a relationship between two variables or not, and is also used to measure the degree of the relationship between two or more variables.

The parametric method of correlation analysis supposes that for any couple or set of data taken under a given set of conditions, variation in each of the variables is random and follows a normal distribution pattern. One can measure the degree between two variables by correlation coefficient represented by the symbol “r” and the coefficient’s (r) ranges from +1.0 to –1.0.

If “r” has a positive value (more than 0) it means that the relationship between the variables is positive. The relationship can be seen on the scatter plot as shown in Figure 2.12 below:

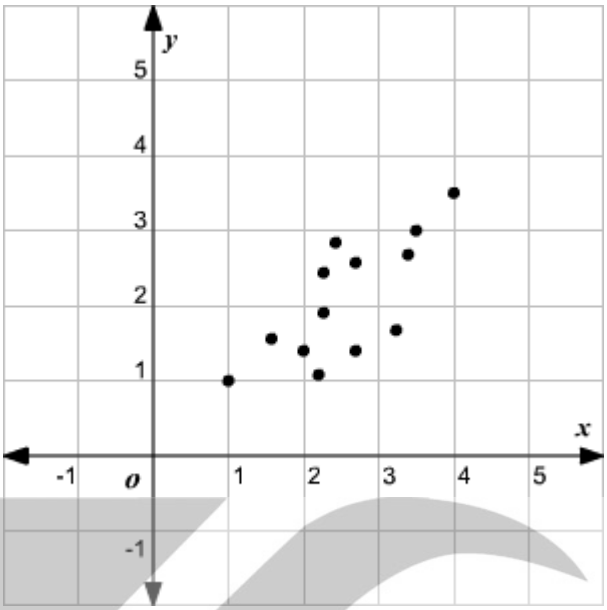
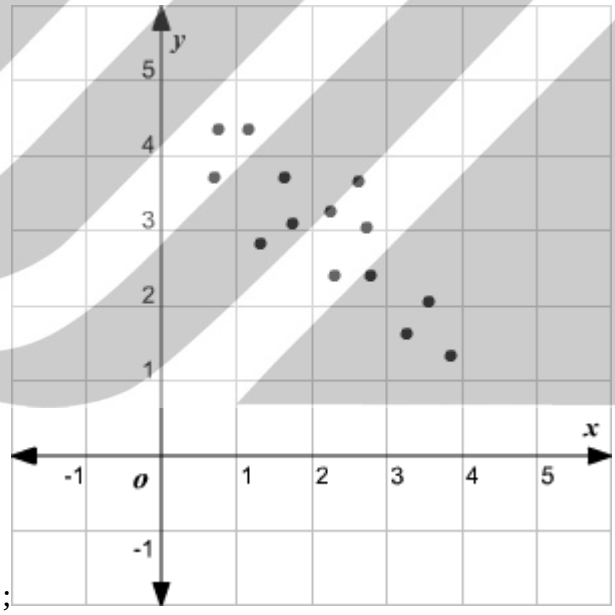


Figure 2.12 The positive correlation.

Source: Wickens K. , 2013 : Online

If "r" has a negative value (lower than 0) it means that the relationship between the variables is negative. The relationship can be seen on the scatter plot as shown in Figure 2.13 below:



;

Figure 2.13 The negative correlation.

Source: Wickens K. , 2013 : Online

If "r" is 0 it means there is no relationship between the variables. The relationship can be seen on the scatter plot as shown in Figure 2.14 below:

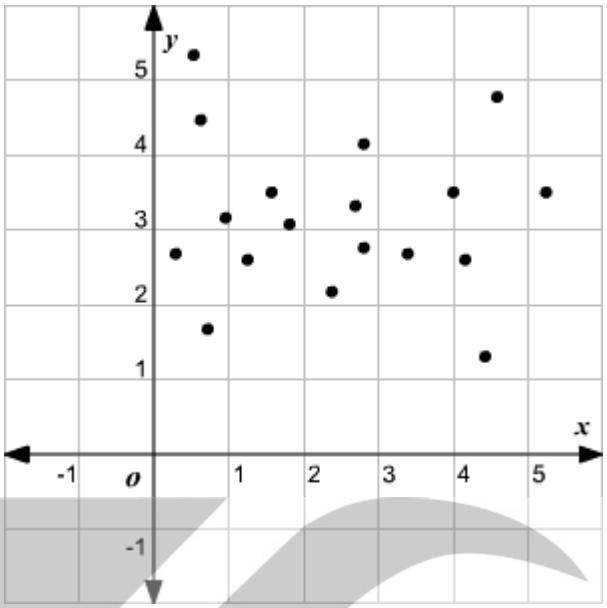


Figure 2.14 Zero correlation.

Source: Wickens K., 2013 : Online

The limitation of correlation coefficients "r" means it is only used for measuring a linear relationship. However, the correlation coefficient "r" cannot be used for measuring cause and effect between the variables.

One of the most popular methods used for measuring the correlation is Pearson's correlation coefficient. The Pearson's formula is shown here:

$$r_{xy} = \frac{n \sum xy - \sum x \sum y}{\sqrt{(n \sum x^2 - (\sum x)^2 (n \sum y^2 - (\sum y)^2)}}$$

The Pearson's correlation coefficient has numerical value ranges –1 to +1. The figure –1 shows a strong negative correlation and +1 shows a strong positive correlation (Hotmath, n.d : Online)

The coefficient of determination or r^2 explains what the ratio of the variation in the dependent variable is related with the regression of an independent variable. It is possible to define how one variable can be used for predicting a model or graph. The coefficient of determination is the ratio of the explained variation to the total variation. The coefficient has numerical value ranges of: $0 \leq r^2 \leq 1$ and shows the

strength of the linear association between *x* and *y*. The coefficient of determination shows the percent of how close it is between the data and the line.

For example, if $r = 0.933$, then $r^2 = 0.860$, which means that 86% of the total variation in *y* can be interpreted by the linear relationship between *x* and *y* (as explained by the regression equation). The other 14% of the total variation in *y* still cannot be explained.

In conclusion, the coefficient of determination is a representation of how close of the regression line is displayed in the data. If the regression line passes through every point on the scatter plot, it would be able to describe all of the variations. If the line is not close or has space from the points, this means it is less able to describe all the variables (Pidwirny M., 2006 : Online).

Regression analysis

Regression analysis (Syke, n.d. : Online) is a statistical tool used to prove the relationships between variables. Usually, this tool is used for finding the causal effect of one variable upon another.

Meck C. and team (1994) indicated that regression models are commonly used to estimate the "influence" that a dependent variable (X) has on an independent variable (Y), in case the relationship among the variables are linear.

Simple Linear Regression

In a simple regression analysis, one **dependent variable** is related to only one **independent variable**. This equation has the mathematical form as follows:

$$\mathbf{Y = a + bX}$$

Y is the value of the dependent variable and **X** is the value of the independent variable, **b** is the slope of the regression line. When **X** = 0, **a** is the interception of the regression line on the **Y** axis.

The first step of regression analysis is to plot the **X** and **Y** data on a graph, for checking the relationship between X and Y. If two variables have a relationship, the data which is plotted points in a graph will tend to form into a shape (straight line or a curve). If they have a strong relationship, those plotted points will be close to each

other but if the plotted points are more spread out or randomly distributed, that might be a zero relationship between X and Y.

The pattern shape (Parabolic Curve, Straight Line, Exponential, Others) will define the type of regression model to be applied to the data. The next step is to calculate the corrected sums of squares and products used in a bivariate linear regression analysis.

The **corrected sum of squares** for **Y**:

$$\sum \mathbf{y^2} = \sum \mathbf{Y^2} - \frac{(\sum \mathbf{Y})^2}{n}$$

The **corrected sum of squares** for **X**:

$$\sum \mathbf{x^2} = \sum \mathbf{X^2} - \frac{(\sum \mathbf{X})^2}{n}$$

The **corrected sum of products**:

$$\sum \mathbf{xy} = \sum \mathbf{(XY)} - \frac{(\sum \mathbf{X})\,(\sum \mathbf{Y})}{n}$$

The common form of the equation for a straight line is **Y = a + bX**. In this equation, **a** and **b** are constants or regression coefficients that are estimated from the data set. From the mathematical processes of least squares, the best estimates of these coefficients are:

$$b = \frac{(\sum \mathbf{XY})}{(\sum \mathbf{X^2})}$$

$$a = Y - bX$$

After the values of a and b are obtained in the above equation, it is possible to estimate Y from X and also be able to describe their relationship on a scattergram plot with a best fit line. A sample of scattergram plot is shown in Figure 2.15:

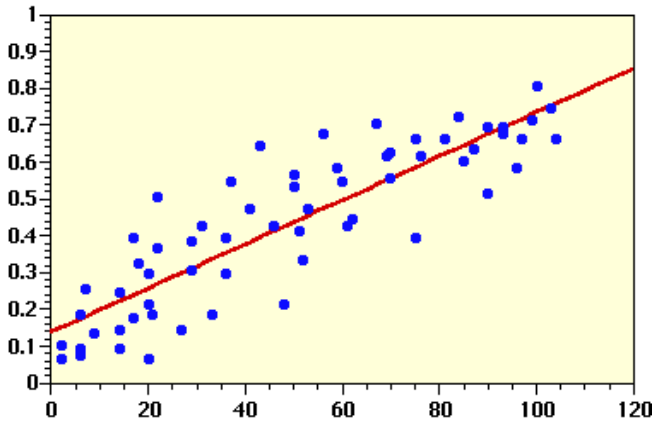


Figure 2.15 Scattergram plot

Source: Pidwirny M., 2006 : Online

Regression Analysis and ANOVA

A regression model can be seen as a type of moving average. The regression equation aimed to present the association between the Y and X variables through linear association. For a value of **X**, the regression model provides an estimated value of **Y**. On reviewing at above graph (Figure 2.15), it shows that many of the plotted points are above the regression line, while some of the plotted points are below the regression line. This means that variations were caused by a sampling error or, in more realistic terms, that some other unexplained independent variable influenced the individual values of the **Y** variable.

The **corrected sum of squares** for **Y** (i.e., S y^2) defines the total amount of variation that effects the individual observations of **Y**. The amount of variation in **Y** that is directly related to the regression on **X** is called the ***regression sum of squares***. This value is calculated by using this equation:

$$\textbf{Regression SS} = \frac{(\sum XY)^2}{\sum X^2}$$

The amount of the total variation in **Y** that is not associated with the regression is termed the ***residual sum of squares***. This value is calculated by using this equation:

$$\textbf{Residual SS} = S\,y^2 - \textbf{Regression SS}$$

After obtaining the Residual SS (the amount of unexplained variation) a standard can be used for testing the amount of variation attributable to the regression. The ***F-test*** can be used to test its significance from calculations performed in an ***Analysis of Variance*** table. An example of Analysis of Variance is shown here in Table 2.1:

Table 2.1 Analysis of Variance

Source of variation	df 1	SS	MS 2
Due to regression	1	2.1115	2.1115
Residual (unexplained)	60	0.6711	0.0112
Total	61	2.7826	-

From the Table 2.1, it shows the number of Y analyzed is 61 valued. Therefore N=61. The total sum of squares **degrees of freedom** (df) is determined as n-1 or 60. The regression of **Y** on X has 1 **degree of freedom**. **MS** is calculated by **SS / df**.

The regression is tested by calculating the ***F statistics***:

F = (Regression MS) / (Residual SS) = (2.1115) / (0.0112) = 188.86

The Table makes it possible for F to find a critical test value which in this case it was best to choose a probability of 1% and with **1,60** ***degrees of freedom*.** From the table the critical test value = 7.1. To compare the F statistic with what was calculated before with the critical test value as is open from the table. It was found that the F statistic is greater than the critical test value. This regression is statistically significant at the **0.01 level** because 188.86 > 7.1.

However, caution must be taken when interpreting the results from regression. From the example provided above, there was a significant relationship between X and Y. However, this calculation may not be the result of a causal relationship between X and Y.

Coefficient of Determination

Another way for measuring how strong of the correlation between two variables will be, would be to use the amount of the total variation in **Y** that is associated with the regression model or called the **coefficient of determination** (the

symbol $\mathbf{r^{2)}}$. The numerical value of the coefficient of determination ranges from 1.00 to 0.00 as noted in the equation below:

Coefficient of determination = (Regression SS) / (Total SS)

The method used to interpret the results from Coefficient of determination from the above equation would be if one had 0.75 it will be interpreted to be 76%. This number will show that the variation in Y was associated with the change **X**.

Correlation Coefficient

Another useful tool that is used for measuring the strength of the regression correlation between two variables is the **correlation coefficient (the symbol "r")**. The value of the correlation coefficient ranges from 1.00-to-1.00. A value of 0.0 shows that there is no relationship between the **X** and **Y**.

2.10 General information of the Bang Poo industrial Area

The Bang Poo Industrial Estate was established in 1977, and developed by the Thailand Industrial Real Estate Development Company Limited. It is locate in the Samuthprakarn prvince of Thailand. The total area is around 1,806 acres. The number of factories in operation is 353 in total. From this number, the researcher of this project subtracted the number of those not in operation or are just a warehouse, because those factories have no engineering departments involved. From the number of the operating factories, the developer divided all the factories in to two distinct areas. First, the general industrial area has 304 operating factories and Area number 2 is the IEAT (Industrial Estate Authority of Thailand) Free-Area with 49 operating factories

Table 2.2 Percentage of Industry categories in Bang Poo industrial area.

Industry Category	%
Fertilizer/paint/chemical products	22
Metal/Steel	15
Textiles/leather/clothes	8
Rubber/Plastic/imitation leather	10
Electronics/Scientific equipment	12
Automobiles	3
Food/Paper/Printing	15
Warehouse and not in operation factories	15
Total	100

Source : Bang Poo Industrial Estate, 2014 : Online

Table 2.3 Nationality of the investment operations in Bang Poo industrial area.

Nationality	%
Thai	39
Japanese	24
Taiwanese	20
American	5
Others	12
Total	100

Source : Bang Poo Industrial Estate, 2014 : Online

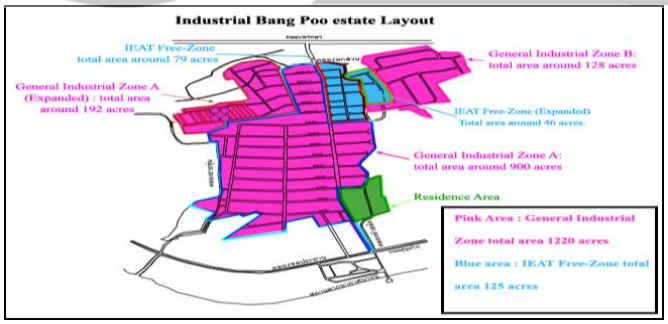


Figure 2.16 Industrial Bang Poo estate Layout

Source : Adapted from Bang Poo Industrial estate, 2014

As can be seen in Figure 2.14, this research project studied only the area which is focused on general industrial and the IEAT free-zone area. The total area studied in this research amounted to 1,345 acres in total (Bangk Poo Industrial estate, 2014).

2.11 Previous Studies

From the previous research projects it was possible to divide those research areas into three groups: Group 1) The research teams which studied about the readiness of engineers for the upcoming AEC, and the researchers which studied about foreign languages skills; to analyze the problem and dependent and independent variables in all of those research projects.

Group 2) The research which studied about the relationship variables to study statistic tools that were used in those research projects.

And Group 3) The research which studied about variable influences to study the statistic tools that were used in that research.

The first research in Group 1 was the topic covering the: "readiness to cope with the free flow of skilled labour in the ASEAN economic community of engineers in electronics and computer companies" undertaken by Joungtrakul N. (2012). This research studied three main areas: 1) the readiness of Thai engineers in terms of working skills and foreign languages; 2) To study their methods of preparation for the readiness to cope the AEC; and 3) To study whether the differences of demographic background has an effect with the readiness or not. The population of the study on engineers in electronics and computer companies, used the sample size of 420 engineers. The researcher used the multi-stage random sampling method. The results from this research found that the readiness in terms of working skills, knowledge and foreign language skills was at a moderate level. For the second hypothesis, the results found that for education, the position levels and size of the company had significance in their readiness. The comparison of readiness in terms of foreign languages showed that the size of the company had a significant difference in readiness. The methods mostly used in the preparation for readiness were monitoring and studying information and participating in training programs provided by the company.

From the research topic covering the: "readiness to cope with the free flow of skilled labour in the ASEAN economic community of engineers in electronics and computer companies," the researcher decided to choose the multi-stage random

sampling to use in this research because the Bang Poo industrial area has 353 factories in the area so this was suitable for using the same random sampling method. The researcher chose education background, position level, and the size of company to be independent variables too.

The second area of research in Group 1 was the topic: “ASEAN Economic Community (AEC): Are Our Engineering Students Ready for 2015?” by Chotika Wongwichai, Setthanan Chaiyut, Tavit Kitprapa, Pornpen Jirojmontree and, Nattharika Rittippant (Chotika Wongwichai & team, 2013). The focus of this study was to assess the readiness of Thai engineering students and the engineering profession in Thailand. The researchers dispensed surveys to Thai engineering students from seven universities. The number of the target sample was 726. The study investigated the preparation for the AEC, and the results showed that the overall readiness of Thai engineering students was low. The results from this research noted that those with the highest education had the most preparation on searching information about the AEC on the internet. Their English language score and the readiness of engineering students was quite high because the faculty of Engineering in each of the universities had a high score for the National Admissions test. The comparison between engineering students in a private university and a public university had different results. The public universities had a higher percentage in family support to study in foreign languages and also had a higher percentage in University support in terms of advertisements, more than private universities. The research also found that for private universities, they had a high percentage of self-support in finding information on the internet. Even though they had a high English score in the National Admissions test, they still had a lower percentage in studying a foreign language, which might lead to the lack of communication in English language skills.

From the research topic covering: “ASEAN Economic Community (AEC): Are Our Engineering Students Ready for 2015?” the results from this research repeated that Thai engineers targeted mostly lacked foreign language skills and showed that the most significant distribution to study about the AEC information for engineer students was searching on the internet. This was a reminder about the ways of how people perceived the information received by many sources and the internet is

one source that people perceived things by using the five senses. Therefore, the distribution method might be related to the individual's perception. Although this research did not directly focus on the perception of engineers of the AEC and its environment, this research has an advantage for the study framework, in the relationship between independent variables and dependent variables and the discussion of the results that were provided.

Kriengsak Sayananun and Wattana Patkate (2011) researched on the topic covering: "A study of the relationship between age and English learning achievement and the factors that influence satisfaction of an English language learner." This research attempted to understand EFL (English as a foreign language) students' learning achievement in relation to many factors such as the differentiation of the starting ages of EFL learning and the factors that directly or indirectly influences learning satisfaction or dissatisfaction. This research used the quantitative method through a specific questionnaire, and investigated 1,667 Naresuan University first year students. The results found that most of the students began to study English at Grade 5 in secondary school. For those who started to learned English at Kindergarten obtained better grades at the university level than those who started to learn English at Grade 1 and 5, statistically significant at < .05. The literature review about learning/teaching English as a second language and second language acquisition were widely studied over more than four decades. Results from the previous research found that the percentage of people who have continuously learned English have more opportunity to be successful in learning a foreign language than those who have not been learning from the beginning or do not use English outside the classroom. Many research studies found that the starting age for learning foreign language skills is related to the ability to use a second language. The results from this research found that of the people who appreciated the advantage of studying English most of them tended to focus on the degree results after they graduated, or that English language can be more useful in the work place.

From the research topic that covered: "A study of the relationship between age and English learning achievement and the factors that influence the satisfaction of an English language learner" mainly studied about the age and the factors that influence satisfaction of a student, which is not directly involved with the perception of

engineers of the AEC and its environment. However, from the discussion of this research it can be proved that basic demographics of the targeted Naresuan Students were related with the English learning achievement, so this framework can be used for creating a dependent variable that relates with decision making to develop foreign language skills. Another advantage from using this research was from the literature review that used second language acquisition to be one of the theory parts, so it was possible to learn more about this theory through this specific research project.

The previous research in Group 2 studied about relationship variables.

Narong Luengbootnak & Watcharapong Deewong (2012) studied the topic covering the: "Perception of a Group of Thai People on ASEAN Mutual Recognition Arrangements of Services Professionals." This research focused on the importance of the ASEAN Mutual Recognition Arrangements (ASEAN MRAs) of services professionals to facilitate free movement of skilled labour in ASEAN. The aim of this descriptive research was to study the perception of Thai people on the ASEAN MRAs of services professionals by using 31 responders who attended the seminar for the The 4th KKU International Engineering Conference 2012 "Driving together towards ASEAN Economic Community." It assessed the ASEAN Economic Community: a New Dimension of ASEAN, conducted by the cooperation of The Senate Committee on Foreign Affairs and the King Prajadhipok's Institute. The research questionnaire was made up of two specific parts: 1) demographic characteristics and 2) perceptions of the ASEAN MRAs. Data was analyzed by using the descriptive statistics. The results found that the overall samples perceived the information of the ASEAN MRAs at a moderately low level. The recognized level of the ASEAN MRAs as opportunities at a moderately high level and to recognize the ASEAN MRAs as threats were at a moderate level. Furthermore, their opinion thought that the readiness for implementing the ASEAN MRAs of Thailand was moderately low. Since this study collected data from the specific small group of Thai people, therefore, these results cannot be used to represent the overall population of Thailand.

From this research topic covering the: "Perception of a Group of Thai People on ASEAN Mutual Recognition Arrangements of Services Professionals," this research studied about the perception of Thai people of the ASEAN MRA of services professionals. The core theory of this research was the perception theory and MRAs of

services professional theory, so this can be used to explore more about all of those core theories which are the part of research topic: i.e. the relationship between demography, company characteristics and the perception of engineers of the AEC and its environment influencing the decision making to develop their foreign language skills. Also, another useful part of this research was that it studied the dependent variable which is related with perception of MRAs by service professionals.

Pudthum S. & Sutamuang K. (2013) studied the topic of the: "Perception of opening an ASEAN Economic Community by the Thai Government in working people in Bangkok". This research aimed to investigate the perception on opening an AEC (ASEAN Economic Community) of the Thai Government in working people in the Bangkok area to find out several factors which were related to organizational culture factors influencing perception of the AEC. The three main objectives were: (1) To study the different factors of demographics with the perception of the AEC; (2) To study the relationship between various factors to learning about the AEC with the perception of the AEC; and (3) To study the relationship between irrelevant factors of economic growth with the perception of the AEC. This research used a check-list questionnaire collected from a target of a 400 sampling from working people in Bangkok in ten districts within the Bangkok area. The questionnaire was divided into four specific parts: Part 1 gathered demographic data; Part 2 assessed internal factors, AEC perceiving methods and company characteristic questions; Part 3 addressed external factors in questions on areas such as cultural, government policy, and economic growth; Part 4 focused on the respondent's basic background knowledge of the AEC.

The results from this research found: 1) The difference of demographics had an effect on perception of the opening of the AEC; 2) The education level had an effect on the perception of opening the AEC; 3) The internal factors in terms of learning about the AEC had a relationship with the perception of opening the AEC; and 4) The external factors and the government policy about learning about the AEC had a relationship with the perception of opening the AEC.

From the research topic which addressed the: "Perception of opening an ASEAN Economic Community by the Thai Government in working people in Bangkok," this research assessed the perception of opening the AEC which is very

close with the research that this research project is studying. Although it did not completely cover all of the variables, this present researcher can adapt the framework and internal, external variables that might relate to the perception of engineers of the AEC and its environment.

The previous research in Group 3 started from this point onward. This part will present studies from previous research projects which studied about what variables are influential and also studied about the statistic tool that is suitable when using the questionnaire to collected relevant data.

Yuequin Yu (2014) researched the topic on: "The study of factors affecting customer satisfaction in automobile service industry in Shanghai, China." The objectives of this research were to investigate the factors that affect customer satisfaction in the automobile industry in Shanghai, China and to also analyze a relationship between factors and customer satisfaction in the automobile service industry. This research used quantitative methodology and used a questionnaire as the data collection tool. A sample of 420 respondents who owned a car in Shanghai, China was used. This research used data analysis program including percentage, frequency, mean, standard deviation, multiple regression analysis, and Pearson's correlation coefficients. The independent variables were product attributes, service quality, service recovery, convenience, the CRM system, corporate image, and price fairness. The results from this research found that a majority of the respondents highly agreed that the seven variables effected customer satisfaction in the automobile industry and the hypothesis testing found that each factor had a positive effect on customer satisfaction.

Although this research might not be involved with the perception or decision making theory at all, but the advantage of this research was that the various statistic method, such as Pearson's correlation and multiple regression were used to analyze the effect factors that influence the independent variables. Therefore, this present researcher can use the research to understand how to interpret and analyze results from many statistic tools as shown in this other research project.

Kasira Ratanaphatarasiri (2014) studied the topic of: "Factors influencing consumer's buying decision making behavior on 'non-performing assets' from Bangkok Commercial Asset Management Company Limited in Bangkok." The

research project's main objectives were to study the factors influencing consumers' buying decision making behavior on non-performing assets (NPA) from Bangkok Commercial Asset Management Company Limited (BAM) in Bangkok. The 400 respondents were living in Bangkok and were selected by convenience sampling. The researcher used quantitative methodology, collecting data by using a questionnaire and the results were analyzed by the t-test, F-test at a 95% confidence level, LSD method, one-way ANOVA, and also the multiple regression analysis method. The results revealed that the marketing mix factors in terms of promotion had the greatest positive influence on a consumer's buying decision making behavior on NPA from BAM in Bangkok.

Although this research was not involved with the perception of the AEC theory, the advantage of this research was that the various statistic methods, including the t-test, F-test, one-way ANOVA and multiple regression were used to analyze the effect factors that influence the independent variables. Therefore, the researcher of this present project can use it to learn how to interpret and analyze results from many statistic tools, as were shown in this previous research project.

CHAPTER 3
RESEARCH METHODOLOGY

Concerning the study of the relationship between company characteristics, the demography of engineers and their perception of the AEC and its environment and what influences the decision to develop their foreign language skills, in the Bang Poo industrial area, Samuthprakarn, Thailand, the researcher developed and designed the research according to the process methods previously studied. Therefore, the methodology included scopes of the study, population and sample size, research planning process, hypotheses of the study, research design and instrument, the data collecting procedure, and data analysis.

3.1 Population and Sample Size

The target population in this study was a selection of engineers who were working in the Bang Poo industrial area, in the Samuthprakarn province of Thailand. There were 353 factories from both general industrial zone and the IEAT free-zone area located in Bang Poo industrial estate, a number taken as general information from the Bang Poo industrial estate office. They divided all of those factories by industry category as noted in a previous chapter. For some reason, there is no record concerning the number of engineers working in that area, therefore the researcher had to set the assumption to evaluate the number of the target population based on the information from the Bang Poo industry office.

3.1.1 The researcher separated the industry categories by the complexity of each industry into three specific levels, ranging from the most complex to the least complex as presented in Table 3.1, as follows:

Table 3.1 Industry category by complexity

Most complexity	Average complexity	Less complexity
- Metal/Steel	- Fertilizer/paint/chemical	- Cloth/textile/leather
- Electronics/Scientific	products	- Food/Paper/Printing
equipment	- Rubber/Plastic/Imitation	- Others
- Automobile	leather	

Source: Adapted from Bang Poo industrial estate, 2014 : Online

3.1.2 To find out the quantity of a factory in each complexity industry level, divided by size based on factory capital which this researcher received from the information provided from the Bang Poo industrial office. Details are shown in following tables:

Table 3.2 Quantity of factories in the least complexity industries.

Size	Quantity of factory
Small	97
Medium	20
Large	17
Total	**134**

Source: Adapted from Bang Poo industrial estate, 2014 : Online

Table 3.3 Quantity of factories in average complexity industries.

Size	Quantity of factory
Small	81
Medium	16
Large	15
Total	**112**

Source: Adapted from Bang Poo industrial office estate, 2014 : Online

Table 3.4 Quantity of factories in the most complexity industries.

Size	Quantity of factory
Small	77
Medium	16
Large	14
Total	**107**

Source: Adapted from Bang Poo industrial estate, 2014 : Online

3.1.3 To find out the quantity of engineers by making an assumption of the number of engineers in each company, based on its complexity level. For the least complex industries, a small factory was assumed to have one engineer, a medium size

factory to have two engineers, and a large factory to have three engineers. For an average complex industry, a small factory would have one engineer, a medium size factory would have four engineers, and a large factory would have five engineers. For the most complex industries, a small factory would have one engineer, a medium size would have 6 engineers, and a large factory would have seven engineers. Details are presented in the following tables:

Table 3.5 Quantity of engineers in the least complex industries.

Size	Quantity of factory	Quantity of engineers
Small	97	97
Medium	20	40
Large	17	51
Total	**134**	**188**

Source: Adapted from Bang Poo industrial estate, 2014 : Online

Table 3.6 Quantity of engineers in average complex industries.

Size	Quantity of factory	Quantity of engineers
Small	81	81
Medium	16	64
Large	15	75
Total	**112**	**220**

Source: Adapted from Bang Poo industrial estate, 2014 : Online

Table 3.7 Quantity of engineers in the most complex industries.

Size	Quantity of factory	Quantity of engineers
Small	77	77
Medium	16	96
Large	14	98
Total	**107**	**271**

Source: Adapted from Bang Poo industrial estate, 2014 : Online

In this assumption, the total number of engineers who were working in the Bang Poo industry estate in both general industry and in the IEAT Free-Zone was 679 people.

3.1.4 Determine the sample size;

In this research, the researcher had to make a necessary assumption to find out the number of engineers working in the Bang Poo industry area, as shown in the Tables above. For the finite sample population, Taro Yamane created a simplified equation to find the target sample size, in condition of a 95% confidence level (Israel2, 2013).

$$n = \frac{N}{1+Ne^2}$$

In this equation, the letter n is the sample size, N is the number of the population which, in this research project, N = 679. The letter e is the level of precision (in this research it was set at 5%). The researcher used this equation to make the sampling calculation and after applying all of the relevant numbers to this equation, the results were as follows:

$$n = \frac{679}{1+(679)(0.05^2)} = 251.71$$

The results from Yamane's equation was 251.71 which means, this research project needed to use a sampling size of at least 252 engineers.

3.1.5 Sampling method

From the information from the Bang Poo industrial area, as mentioned in a previous chapter and, according to the assumption about the focus group which is divided into subgroups by the complexity of each industry, all of this data can be used to choose the suitable sampling technique. This research project focused on engineers, which is a small group of population, therefore the stratified sampling was the most suitable to use.

Stratified sampling is one type of probability sampling method which the researcher used to divide the whole target group into strata of different subgroups (Explorable, 2009). After that, the researcher selected the sample of respondents from the different strata. This sampling technique represents the sample to increase the

efficiency (University of Alberta, n.d.). This technique has a higher statistical precision compared to the simple random sampling method, because the variability in the subgroup is lower than the entire population.

The researcher divided the sample group into three subgroups by using the complexity of each industry from low complexity, medium complexity, and the last subgroup was the high complexity industries.

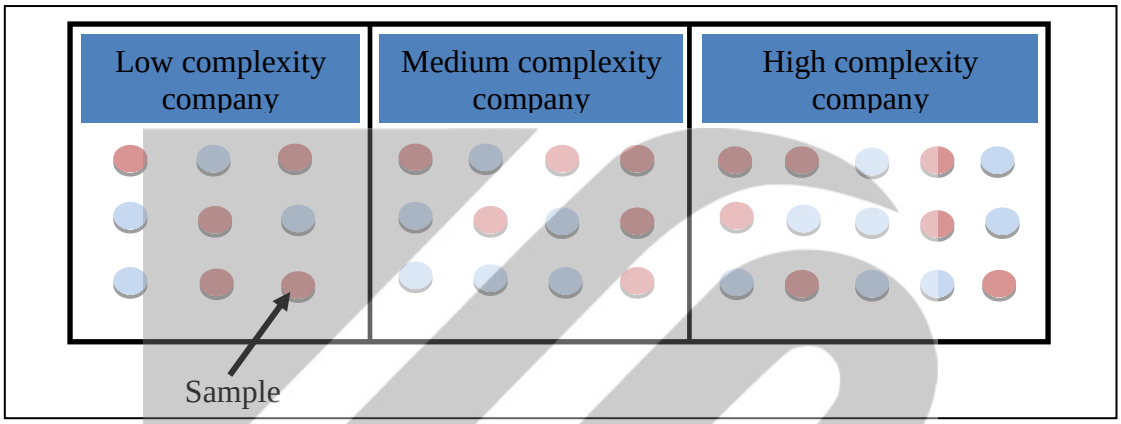


Figure 3.1 Stratified Sampling Method
Source : Adapted from Explorable, 2009 : Online

From the last step, the researcher assumed that the engineers in Bang Poo industrial area were a total of 679 people and the calculated samples was 252 engineers which is around 37% of the entire population. Therefore, the researcher would collect the samples from each subgroup based on 37% from all samples in each subgroup. The details of the selected numbers are shown in Table 3.8, as follows:

Table 3.8 Quantity of sample for the stratified sampling method

Subgroup	Quantity of Engineer	Quantity of sample
Low complexity	188	70
Medium complexity	220	82
High complexity	271	100
Total	**679**	**252**

Source: Adapted from Bang Poo industrial estate, 2014 : Online

3.2 Research Methodology

This research project, focusing on "A study on the relationship between company characteristics, demography of engineers and their perception of the AEC and its environment influencing the decision making to develop their foreign language skills, in Bang Poo industrial Area, Samuthprarkarn, Thailand" used quantitative approaches to research. The scholar Aliyahu B. (2014) argued that the quantitative methodology tends to estimate a phenomenon from a large group of numbers, therefore the data collected by questionnaires, surveys or polls and using mathematical statistics to compute the results (University of Southern California, n.d. : Online).

The researcher completed designing the questionnaire which was used for collecting the data from the engineer respondents. Before the questionnaire could be used, it needs to be pre-tested of its Validity and Reliability first. The results of this test are presented in the next section of the research preparation process.

Pretest of research instrument:

Content Validity

Content validity is one of the first ways to ensure the validity of a questionnaire (Mora M., 2011 : Online). The researcher of this project had to collect the comments and rating scores from three specialists who were involved with the research topics to consider the questions provided in the survey. This assessment used the regularly used IOC (Item-Objective Congruence) > 0.75 test (Hambleton R. K., 1984 : Online).

IOC was reviewed and rated by three specialists in the field. One of the experts was Dr.Apitep Saekow, the Dean of the Graduate school at Stamford International University, Bangkok campus, Thailand. The second expert was a process engineer at Mattel Bangkok company which is operating in the Bang Poo industrial area in the IEAT free-zone, Samuthprakarn, Thailand. The third specialist was a researcher at the Perfect companion group, Thailand.

They appreciated their time to help for rating the score in every question.

The rating score had three levels, as follows:

"+1" means the question is clear to the point to prove the hypothesis.

"0" means the question is unclear.

"-1" means the question missed the point to prove the hypothesis in this research

All of the scores that the three specialists rated can be interpreted by an index evaluation and interpretation of IOC as follows (Hambleton R. K., 1984 : Online):

Over 0.75 means the questions are valid and acceptable.

Equal 0.75 means the questions are objective congruence.

Less than 0.75 means the questions are invalid and unacceptable.

The index of IOC uses a calculation by this following formula:

$$IOC = \frac{\sum R}{N}$$

From the above formula, the $\sum R$ is the total scored by the three specialists. N is the number of specialists used in this research, which was three people. The IOC is the Index of Item-Objective Congruence.

Interpretation of the IOC

In a case where the IOC ≥ 0.5 this means the questionnaire was related with the research objectives or related with measuring variables.

In a case where the IOC ≤ 0.5 this means the questionnaire was unrelated with the research objectives or unrelated with measuring variables.

The questionnaire in this research had four parts which were evaluated by the three specialists. The questionnaire initially had a final rated score of less than 0.75 so the researcher needed to edit the questions by following the specialist's advice.

Thus, after the researcher edited the questionnaire, there were 33 items left and the total IOC was equal to 0.95 which meant that it had reached an acceptable level.

Reliability Test

The Reliability Test is the degree to estimate the stability and consistence of the questionnaire. Internal consistency reliability is a measure of reliability used to evaluate the degree to which different test items that seek the same or very close results (Phelan C., & Wren J.: Online).

Cronbach's alpha is a tool used to measure the internal consistency of the questionnaires, to analyze how close is the set of the questions; do they relate with each other or not? This tool measures by scale reliability (University of California,

n.d. : Online). For reliable and credible research purposes the Cronbach's alpha results should be more than 0.7 (MedCalc, n.d. : Online)

In this research Cronbach's alpha was used to analyze the internal consistency of the questionnaire. This research focused on engineers who were working in the Bang Poo industrial area, therefore the pre-test of the questionnaire was sent to 30 respondents by email. The results of Cronbach's alpha are shown in Table 3.9 below:

Table 3.9 Reliability test results of the pre-testing of the questionnaire.

Variables	Cronbach's Alpha	Number of questions
The AEC receiving channel	0.914	6
Perception of the AEC in terms of Government policy	0.880	4
Perception of the AEC in terms of Cultural diversity	0.827	5
Perception of the AEC in terms of Economic growth	0.827	4
Perception of the AEC in terms of Technology	0.864	3
Perception of the AEC in terms of MRAs	0.893	5
Perception influencing the decision to develop foreign language skills	0.857	6

From the results in Table 3.9, presenting the reliability test from the pre-testing questionnaire with Cronbach's alpha, in every segment the questions gained the value of Cronbach's alpha as more than 0.7 which means the questionnaire was acceptable in the reliability test.

3.3 Data collection

Data collection means a process of collecting and preparing data. Data has two types – primary data and secondary data (Kadam A., Shaikh R. & Parab P., 2013). The data collection of this research used both types of data, the details of which are described as follows:

3.3.1 Primary data collection

For the primary data, the researcher collected data through surveys by distributing questionnaires to engineers who were working in Bang Poo industrial

area. The sampling size was 260, therefore the researcher collect 285 in case some data could not be used due to some error, or if some were not returned from the respondent to the researcher. The questionnaire which was used in this research was divided into four parts, described as follows:

Part 1: Demographic data. This part was measured by using a nominal scale and ordinal scale for measuring the personal data of the respondents. The details were as follows:

1.1 Gender used a two-way question – nominal scale.

1.2 Age used a multiple choices question – ordinal scale.

1.3 Marital status used a multiple choice question – nominal scale.

1.4 Education used a multiple choice question – ordinal scale.

1.5 Monthly income used a multiple choice question – ordinal scale.

1.6 Years of work experience used a multiple choice question – ordinal scale.

1.7 Engineering category used a multiple choice question – ordinal scale.

Part 2: Company characteristic. This part was measured by using a nominal scale and ordinal scale for measuring the company characteristics of the respondents.

2.1 Size of company used a multiple choice question – ordinal scale.

2.2 Industry category used a multiple choice question – ordinal scale.

2.3 Company has an AEC training course for engineers used a two-way question – nominal scale.

2.4 Company has a meeting or training course or work trip for engineers located in AEC member countries used a two-way question – nominal scale.

2.5 Company has another branch or manufacturing in AEC member countries used a two-way question – nominal scale.

2.6 Company plans to expand into the AEC member countries used a two-way question – nominal scale.

2.7 Company has new business strategies for AEC used a two-way question – nominal scale.

2.8 Company is well prepared for more challenges with the AEC used a two-way question – nominal scale.

Part 3: The perception level of engineers of the AEC and its environment. This part was measured by using the five-level Likert scale. This part had six main questions covering topics which evaluated the perception level of engineers from the external factors that may be related to their perception of the AEC and its environment. The researcher addressed six main topics which were available in the questionnaire as follows:

3.1 The perception level of engineers of the AEC and its environment in terms of distribution channel.

3.2 The perception level of engineers of the AEC and its environment in terms of Government policy.

3.3 The perception level of engineers of the AEC and its environment in terms of Cultural diversity.

3.4 The perception level of engineers of the AEC and its environment in terms of Economic growth.

3.5 The perception level of engineers of the AEC and its environment in terms of Technology.

3.6 The perception level of engineers of the AEC and its environment in terms of the ASEAN Mutual recognition arrangement on engineering services.

From the above questionnaire topics, as mentioned before, this part was measured by using the five-level Likert scale. The selected categories scale of five levels was as follows:

Table 3.10 Five-level Likert scale for questionnaire Part 3

The Perception level	Lowest	Low	Average	High	Highest
Score	1	2	3	4	5

In this research project, the researcher used a classified method to analyze the data from the questionnaire's part 3 by using the class interval formula. The class interval quotes to the numerical width of any class in a specific spreading of data. In terms of mathematics, it is provided from the difference between the upper class limit and the lower class limit (MBASkool, 2014 : Online). The class interval formula which was used in this research, is shown here:

Class Interval = Upper Class limit – Lower class limit

$$= \frac{5 - 1}{5}$$

$$= 0.8$$

The results from the class interval formula can be described in details of the numerical range, as presented in the following Table 3.11:

Table 3.11 Average mean scores of each class

Level of respondents perception	Numerical rating
Lowest	1.00 - 1.80
Low	1.81 - 2.60
Medium	2.61 - 3.40
High	3.41 - 4.20
Highest	4.21 - 5.00

Part 4: The perception of engineers of the AEC and its environment influencing the decision making to develop their foreign languages skills. This part was measured by using the five-level Likert scale. This part had six questions which evaluated the influencing level of the decision making to develop foreign languages skills from the engineer's perception of the AEC and its environment. The researcher designed the questionnaire in this part, as follows;

4.1 TV media about the AEC has an influence on your decision making to develop foreign language skills

4.2 Printing media about the AEC has an influence on your decision making to develop foreign language skills

4.3 Verbal communication about the AEC from your friends, colleagues, or supervisor has an influence on your decision making to develop foreign language skills

4.4 Websites or social media about the AEC has an influence on your decision making to develop foreign language skills

4.5 Billboards or Signboards about the AEC have an influence on your decision making to develop foreign language skills

4.6 Radio programs about the AEC have an influence on your decision making to develop foreign language skills

4.7 The government policy about the AEC has an influence on your decision making to develop foreign language skills

4.8 Cultural diversity in the AEC has an influence on your decision making to develop foreign language skills

4.9 Economic growth from the AEC has an influence on your decision making to develop foreign language skills

4.10 The widely used technological from the AEC has an influence on your decision making to develop foreign language skills

4.11 The ASEAN Mutual recognition arrangement in engineering services has an influence on your decision making to develop foreign language skills

From the above questionnaire topics, as mentioned before, Part 3 and Part 4 used the five-level Likert scale. The selected categories scale of five levels are as shown here in table 3.12:

Table 3.12 Five-level Likert scale for questionnaire Part 4

The decision making level	Strongly Disagree	Disagree	Neither disagree nor agree	Agree	Strongly Agree
Score	1	2	3	4	5

In this research project, the researcher used a classified method to analyze the data from the questionnaire's part 4 by using the class interval formula as already shown in Part 3. Also, the Average mean scores of each class in the questionnaire's Part 4 are the same results as show in Table 3.10.

3.3.2 Secondary data collection

Secondary data is data that has been collected for another purpose (Kadam, Shaikh, & Parab, 2013). In this research project, some secondary data has been used. The researcher collected data from various sources such as newspapers, magazines, textbooks, academic journals, websites, the government websites, previous research projects, and general information about the Bang Poo industrial estate.

The researcher used all of the information to support the research and applied it to the assumption, theories, conceptual framework, several hypotheses, the four sections of the questionnaire and more

3.4 Data Analysis

After the researcher finished collecting all the surveys from 252 respondents the stratified sampling method was used, as described before. The SPSS (Statistical Package for the Social Sciences) program was used to analyze and compute the results.

3.4.1 Descriptive Statistics

Descriptive statistics is the ordinary way to describe data in a large group. Descriptive statistics are an emphasis tool in statistics, therefore this method can present raw data which is hard to visualize. Measures of the central tendency, is mostly used to analyze the mean, median, mode, range of data, standard deviation (SD) (Leicester U. O., 2000). The questionnaire's Part 1 and 2 included data about demographics and company characteristics which was evaluated by a nominal scale and ordinal scale. This data can use the frequency and percentage to analyze the results.

3.4.2 Inferential statistics

Inferential statistics was used to define the probability of the characteristics of the population that were studied. The inferential statistics helped to evaluate the strength of the relationship between variables. The inferential statistics have various types which were simple and used because there are easy to interpret (Albrech, n.d.). Most of the main inferential statistics are normally used, such as T-test, Analysis of Variance (ANOVA), regression analysis (simple regression and multiple regression), Pearson's Correlation, Multiple regression analysis, Bivariate regression, Chi-square statistic and more (Trochim W. M., 2006 : Online).

In this research project, the Pearson's correlation coefficient was used to analyze the relationship between variables and also to identify a direction (positive or negative) between the variables. Also, multiple regressions was used to examine the effects of a single variable or multiple variables. As mentioned in chapter 2, linear regression analysis is a tool that can be used to examine the effect between dependent variables and independent variables.

For the Hypothesis test, the researcher used the Pearson correlation coefficient with the significant level at 0.01 (2 tailed) and linear regression with the significant level at 0.05.

In Statistics, the term 'significant' means 'probably true.' When the program computes a result as being 'highly significant' this means that it is very close to being true. The most common used level which means the data is strong enough to be believed is 0.95, which shows the percent of chance to be true, in this case, is 95%. However, the program was not used to show the results in percentage but it will show ".05" instead (Creative Research Systems, 2014).

If a P-value is lower than the significant level, then the null hypothesis is rejected. Otherwise, if P is greater than 0.05, then the null hypothesis should not be rejected (Shuttleworth M., 2008 : Online).

3.5 Data Collection Procedure

The data collection procedure for this research was planned to be finished within three months. The researcher divided the collection processes into three periods as follows:

3.5.1 First period

Because this research project used the stratified sampling technique which was divided by the complexity of industries, for those reasons the researcher decided to directly contact the human resource departments in each company. This was the easiest way to be able to distribute the survey questionnaires to the engineer employees which was the targeted focus group.

The three ways to contact the manager of each human resource department was used, depending on the situation and circumstances:

1. By telephone
2. By email
3. By an official formal letter

This period was planned to finish within three weeks. The lead time was also to cover the human resource department providing appropriate feedback to the researcher.

3.5.2 Second period

Distribution of the questionnaire surveys to the co-operating factories was undertaken in two ways:

1. By email through attached electronic surveys.
2. By mail through hard copy surveys.

The researcher identified the returning day of the surveys on the questionnaire headline. This period took around two weeks in total.

3.5.3 Third period

This period was set to collect and check all of the surveys from the cooperating factories. Before placing the key data into the SPSS program, the researcher had to separate and remove any surveys with errors and analyze the fully completed questionnaires after that.

CHAPTER 4
RESEARCH FINDINGS

This chapter presents the findings from the descriptive analysis of the respondents' demographic data and company characteristic data of the respondents and also presents the hypothesis test results.

In the previous chapter the researcher clarified the data collection method which was processed through the human resource development department. The sample size of this research was 252 Thai engineers. For more specific details, the respondents who submitted their completed questionnaires via email and electronic surveys was 152 respondents and those who submitted their answers via letters was 100 respondents.

In this chapter the researcher will clarify the results from the SPSS program in the following order:

4.1 Descriptive analysis of demographics

4.2 Descriptive analysis of company characteristics and company policy

4.3 Descriptive analysis of the perception of the AEC and its environment

4.4 Descriptive analysis of the decision making to develop foreign language skills

4.5 Inferential analysis: hypothesis testing

4.1 Descriptive analysis of demographics

Table 4.1 Frequency distribution of the respondents by gender

Gender	Frequency	Percent
Male	177	70.2
Female	75	29.8
Total	252	100

From Table 4.1, the results show that the total number of respondents was 252. For more specific details, 29.8% or 75 of the respondents were female.

Therefore, the majority of respondents were male for 70.2% (177 people).

Table 4.2 Frequency distribution of the respondents by age

Age	Frequency	Percent
21 - 30 years old	134	53.2
31 - 40 years old	89	35.3
41 - 50 years old	22	8.7
51 - 60 years old	7	2.8
Total	252	100

From Table 4.2, the results represent the number of respondents in terms of age range. 53.2% (134 people) of the respondents were in the age range of 21-30 years old; 35.3% (89 people) of the respondents were in the age range of 31-40 years old; 8.7% (22 people) of the respondents were in the age range of 41-50 years old; and 2.8% (7 people) of the respondents were in the age range of 51-60 years old.

Therefore, the majority of the respondents in terms of age range were in the 21-30 years old category.

Table 4.3 Frequency distribution of the respondents by marital status

Marital status	Frequency	Percent
Single	136	54
Married	113	44.8
Divorced or separated	3	1.2
Total	252	100

From Table 4.3, the results represent the number of respondents in terms of marital status. 54% (136 people) of the respondents were single; 44.8% (113 people) of the respondents were married; 1.2% (3 people) of the respondents were divorced or separated.

Therefore, the majority of the respondents in terms of marital status were single.

Table 4.4 Frequency distribution of the respondents by education levels

Education level	Frequency	Percent
Diploma	22	8.7
Bachelor's degree	161	63.9
Master's degree	67	26.6
Doctorate	2	0.8
Total	252	100

From Table 4.4, the results represent the number of respondents in terms of their education level. 8.7% (22 people) of the respondents education level was a diploma; 63.9% (161 people) of the respondents education level was a Bachelor's degree; 26.6% (67 people) of the respondents education level was a Master's degree; and 0.8% (2 people) of the respondents education level was a Doctorate.

Therefore, the majority of the respondents in terms of their education level held a Bachelor's degree.

Table 4.5 Frequency distribution of the respondents by monthly income

Monthly Income	Frequency	Percent
Lower than 15,000 THB	8	3.2
15,001 - 25,000 THB	98	38.9
25,001 - 35,000 THB	46	18.3
35,001 - 45,000 THB	63	25.0
Total	252	100

From Table 4.5, the results represent the number of respondents in terms of their monthly income. 3.2% (8 people) of the respondents had a monthly income in the range lower than 15,000 THB; 38.9% (98 people) of the respondents had a monthly income in the range of 15,001-25,000 THB; 18.3% (46 people) of the respondents had a monthly income in the range of 25,001- 35,000 THB; 25% (63 people) of the respondents had a monthly income in the range of 35,001-45,000 THB, and 14.7% (37 people) of the respondents had a monthly income that was more than 45,001 THB.

Therefore, the majority of the respondents in terms of monthly income was between 15,000 to 25,000 THB.

Table 4.6 Frequency distribution of the respondents by years of work experience

Years of work experience	Frequency	Percent
Lower than 5 years	122	48.4
6 - 10 years	77	30.6
11 - 15 years	33	13.1
16 - 20 years	8	3.2
21 - 25 years	10	4.0
More than 25 years	2	0.8
Total	252	100

From Table 4.6, the results represent the number of respondents in terms of their years of work experience. For 48.4% (122 people) of the respondents their work experience was lower than 5 years; 30.6% (77 people) of the respondents had work experience in the range of 6-10 years; 13.1% (33 people) of the respondents had work experience in the range of 11-15 years; 3.2% (8 people) of the respondents had work experience in the range of 16-20 years; 4% (10 people) of the respondents had work experience in the range of 21-25 year; and 0.8% (2 people) of the respondents had work experience of more than 25 years.

Therefore, the majority of the respondents in terms of years of work experience was lower than 5 years.

Table 4.7 Frequency distribution of the respondents by engineering category

Engineering category	Frequency	Percent
Mechanical	67	26.6
Civil	10	4.0
Electrical	49	19.4
Industrial	57	22.6
Chemical	49	19.4
Environment	14	5.6
Other	6	2.4
Total	252	100

From Table 4.7, the results represent the number of respondents in terms of their engineering career category. 26.6% (67 people) of the respondents were mechanical engineers; 4% (10 people) of the respondents were civil engineers; 19.4% (49 people) of the respondents were electrical engineers; 22.62% (57 people) of the respondents were industrial engineers; 19.4% (49 people) of the respondents were chemical engineers; 5.6% (14 people) of the respondents were environment engineers; and 2.4% (6 people) are other types of engineer.

Therefore, the majority of the respondents in terms of their engineering specialization category were industrial engineers.

4.2 Descriptive analysis of company characteristic and company policy

Table 4.8 Frequency distribution of the respondents by company size

Company size	Frequency	Percent
Small	73	29.0
Medium	71	28.0
Large	108	42.9
Total	252	100

From Table 4.8, the results represent the number of respondents in terms of the size of the company. 29% (73 people) of the respondents were working in a small company; 28% (71 people) of the respondents were working in a medium size the

company; and 42.9% (108 people) of the respondents were working in a large company.

Therefore, the majority of the respondents in terms of their company size were working in a large company.

Table 4.9 Frequency distribution of the respondents by industrial category

Industrial category	Frequency	Percent
Fertilizer/Paint/Chemical Product	55	21.8
Metal/Steel	19	7.5
Textiles/leather/clothes	28	11.1
Rubber/plastic/imitation leather	29	11.5
Electronics/Scientific equipment	35	13.9
Automobiles	42	16.7
Food/Paper/printing	39	15.5
Others	5	2
Total	252	100

From Table 4.9, the results represent the number of respondents in terms of the industrial category they worked in. 21.8% (55 people) of the respondents were working in the fertilizer or paint or chemical product industry; 7.5% (19 people) of the respondents were working in the metal or steel industry; 11.1% (28 people) of the respondents were working in the textiles or leather or clothes industry; 11.5% (29 people) of the respondents were working in the rubber or plastic or imitation leather industry; 13.9% (35 people) of the respondents were working in the electronics or scientific equipment industry; 16.7% (42 people) of the respondents were working in the automobile industry; 15.5% (39 people) of the respondents were working in the food or paper or printing industry; and 2% (5 people) of the respondents were working in other industries.

Therefore, the majority of the respondents in terms of the industrial category where they were working was in the chemical product industry.

Table 4.10 Frequency distribution of the respondents in company policy

Questions	Yes		No	
	Frequency	**Percent**	**Frequency**	**Percent**
1. Company has the AEC training course for engineers	99	39.3	153	60.7
2. Company have meetings or training courses or work trip for engineers located at AEC member countries	164	65.1	88	34.9
3. Company has another branch or is manufacturing in AEC member countries	101	40.1	151	59.9
4. Company plans to expand into the AEC member countries	152	60.3	100	39.7
5. Company has new business strategies for the AEC	221	87.7	31	12.3
6. Company was well prepared for more challenges with the AEC	239	94.8	13	5.2
Total	976		536	

From Table 4.10, the results represent the number of respondents in terms of company policy. 39.3% of the respondents had attended some internal training about the AEC, but 60.7% had not. 65.1% of the respondents had made a work trip or attended a meeting across other AEC member countries, but 34.9% had not. 40.1% of the respondents were working in a multinational company, but 59.9% were not. 60.3% of the respondents were working in a company which had a plan for expanding into the AEC member countries, but 39.7% were not. 87.7% of the respondents were working in a company which had new business strategies for the AEC, but 12.3% were not. 94.8% of the respondents were working in a company which was well prepared for the AEC, but 5.2% were not.

Table 4.11 Descriptive analysis of the receiving channel and the respondents' perception levels

Description	$\bar{x}$	SD	Level	Rank
You received the information about the AEC through Television Media such as Free TV or local cable TV	3.87	0.993	Very high	1
You received the information about the AEC through Printing Media such as Newspapers/Magazines/journals	3.43	1.233	High	3
You received the information about the AEC from friends or colleagues or your supervisor.	3.33	1.196	Medium	4
You received the information about the AEC through internet or social media such as Facebook or Twitter	3.84	0.651	Very high	2
You received the information about the AEC through billboards or signboards	2.73	1.150	Medium	6
You received the information about the AEC through radio programs	3.18	0.878	High	5
Total	3.39	0.795	Medium	

The information in Table 4.11, shows the results of the perception level of the receiving channel with the average ($\bar{x}$) of all sources as 3.39 and the standard deviation (SD) is 0.795. In addition, whether the respondents received information about the AEC through TV programs is in the Very high ranking ($\bar{x}$ = 3.87, SD = 0.993) and the respondents receiving information about the AEC through printing media is in the High ranking ($\bar{x}$ = 3.43, SD = 1.233); the respondents receiving information about the AEC through verbal communication is in a Medium ranking ($\bar{x}$=3.33, SD = 1.196), and the respondents receiving information about the AEC through the internet is in the very high ranking ($\bar{x}$ = 3.84, SD = 0.651). The respondents receiving information about the AEC through billboards is in the medium ranking ($\bar{x}$ = 2.73, SD = 1.150), and the respondents receiving information about the AEC through radio programs is in the high ranking ($\bar{x}$ = 3.18, SD = 0.878).

Therefore, the top three rankings from Table 4.11 shows the favorite sources for respondents to receiving information about the AEC in different channels. The first place is TV programs, second place is the internet, and the third place is the printing media.

Table 4.12 Descriptive analysis of perception in terms of government policy part and the respondents' agreement levels

Description	$\bar{x}$	SD	Level	Rank
The government has advertising activity about the AEC	3.21	1.010	Medium	4
Thai government is well prepared for the AEC	3.33	0.723	Medium	3
Thai government has plans for improving Thai's commerce to be ready for the AEC	3.44	0.893	High	2
The Thai government is strongly leading Thailand towards the AEC	3.67	0.735	High	1
Total	3.41	0.556	High	

Table 4.12 shows the results of the perception level of respondents on the government policy, with the overall average ($\bar{x}$) of 3.41 and a standard deviation (SD) of 0.556. In addition, the perception level of the government advertising activities is in a medium ranking ($\bar{x}$ = 3.21, SD = 1.010); the perception level on the preparedness of the Thai government for the AEC is in a medium ranking ($\bar{x}$ = 3.33, SD = 0.723); the perception level on an improvement plan for the Thai commerce is in a high ranking ($\bar{x}$ =3.44, SD = 0.893); the perception level on plans for the Thai commerce is in a high ranking ($\bar{x}$ = 3.44, SD = 0.893); the perception level on whether the Thai government is strongly leading Thailand towards the AEC is in a high ranking ($\bar{x}$ = 3.67, SD = 0.7.5).

Therefore, the top three ranking from Table 4.12 shows how strong the perception of respondents was on the Thai government role towards the AEC. The first place is the Thai government are strongly leading Thailand towards the AEC, and in second place is an improvement plan towards the AEC of the Thai government, and the third place is the perception level on the preparedness of the Thai government for the AEC.

Table 4.13 Descriptive analysis of perception in terms of cultural diversity and the Respondents' agreement levels

Description	$\bar{x}$	SD	Level	Rank
You are open for cultural differentiation	4.01	0.806	High	3
You know the difference between cultures across ASEAN and also learn from this	3.79	0.550	High	5
You are willing to exchange Thai culture with other ASEAN members	4.33	0.874	Very High	1
You are willing to exchange cultural factors towards one community	4.04	0.749	High	4
You are proud of Thai culture and are willing to disseminate Thai culture	4.17	0.807	High	2
Total	4.07	0.678	High	

Table 4.13 shows the results of the perception level of respondents on cultural differentiation with the overall average ($\bar{x}$) of 4.07 and a standard deviation (SD) of 0.678. In addition, the perception level of being open for cultural differentiation is in a high ranking ($\bar{x}$ = 4.01, SD = 0.806); the perception level on the knowledge of different cultures within the AEC is in a high ranking ($\bar{x}$ = 3.79, SD = 0.550); the perception level on being willing to exchange Thai culture with another ASEAN member is in a very high ranking ($\bar{x}$= 4.33, SD = 0.874); the perception level on being willing towards one community is in a high ranking ($\bar{x}$ = 4.04, SD = 0.749); the perception level on the worthiness on Thai culture and being willing to disseminate Thai culture is in a high ranking ($\bar{x}$ = 4.17, SD = 0.807).

Therefore, the top three rankings from Table 4.13 show how strong the perception of respondents was on cultural diversity. The first place is the perception level on being willing to exchange Thai culture with another ASEAN member, and second place is the perception level on the worthiness on Thai culture and being willing to disseminate Thai culture. The third place is the perception level of being open for cultural differentiation.

Table 4.14 Descriptive analysis of perception in terms of economic growth and the respondents' agreement levels

Description	$\bar{x}$	SD	Level	Rank
The AEC had effected your personal finances in positive ways	3.41	0.994	High	3
The AEC increased your income	3.35	0.868	Medium	4
The AEC created more challenges in terms of business	3.71	0.960	High	2
The AEC created more opportunities in terms of business	3.91	0.925	High	1
Total	3.60	0.696	High	

Table 4.14 shows the results of the perception level of respondents on economic growth with the overall average ($\bar{x}$) of 3.60 and a standard deviation (SD) of 0.696. In addition, the perception level of the affectation on finances in positive ways is in a high ranking ($\bar{x}$ = 3.41, SD = 0.994); the perception level of the AEC affectation on increasing monthly income is in a medium ranking ($\bar{x}$ = 3.35, SD = 0.868); the perception level of the possibility to gain more challenges in business is in a high ranking ($\bar{x}$ = 3.71, SD = 0.960); the perception level of the ability to gain more business opportunities is also in a high ranking ($\bar{x}$ = 3.91, SD = 0.925).

Therefore, the top three rankings from Table 4.14 show how strong the perception of the respondents was on economic growth. The first place is the perception level of the ability to gain more business opportunities, and second place is the perception level of the possibility to gain more challenges in business. The third place is the perception level of the affectation on personal finances in positive ways.

Table 4.15 Descriptive analysis of perception in terms of technology and the respondents' agreement levels

Description	$\bar{x}$	SD	Level	Rank
Technology had effected your career.	4.22	0.948	Very high	1
The AEC had made you increase your technological potential.	3.80	0.799	High	2
The AEC had made you to be more enthusiastic to learn new technology	3.75	0.785	High	3
Total	3.93	0.606	High	

Table 4.15 shows the results of the perception level of respondents on the wide use of technology with the overall average ($\bar{x}$) of 3.963 and a standard deviation (SD) of 0.606. In addition, the perception level on the affectation of technology with one's career is in a very high ranking ($\bar{x}$ = 4.22, SD = 0.948); the perception level on the possibility of the AEC to increase individual technology potential is in a high ranking ($\bar{x}$ = 3.80, SD = 0.799); the perception level on enthusiasm to learn new technology towards the AEC is in a high ranking ($\bar{x}$ = 3.75, SD = 0.785).

Therefore, the top three rankings from Table 4.15 show how strong the perception of respondents on the wide use of technology among the AEC members. The first place is the perception level of the affectation of technology with one's career, and the second place is the perception level of the possibility of the AEC to increase an individual's technology potential. The third place is the perception level of enthusiasm to learn new technology towards the AEC.

Table 4.16 Descriptive analysis of perception in terms of ASEAN Mutual Recognition Arrangement on Engineering Services and the respondents' agreement levels

Description	$\bar{x}$	SD	Level	Rank
The free flow of skilled labour in the AEC had a positive effect with your career	3.15	1.067	Medium	3
The free flow of skilled labour in the AEC had no effect on you	2.61	0.783	Medium	5
The free flow of skilled labour will increase the opportunities for you to work in another ASEAN member country.	3.39	0.528	Medium	1
The free flow of skilled labour is a risk with your career while having more engineer competitors from the ASEAN member countries.	3.29	0.645	Medium	2
You know the details of MRAs on engineering services	3.04	0.956	Medium	4
Total	3.10	0.404	Medium	

Table 4.16 shows the results of the perception level of respondents on ASEAN MRAs on engineering services with the overall average ($\bar{x}$) of 3.09 and a standard deviation (SD) of 0.404. In addition, the perception level of the free flow of skilled labour in the AEC had a positive effect with the engineer's career is in a medium ranking ($\bar{x}$ = 3.15, SD = 1.067); the perception level of the free flow of skilled labour in the AEC countries had no effect with the engineer's career is also in a medium ranking ($\bar{x}$ = 2.61, SD = 0.783); the perception level of the free flow of skilled labour to increase the opportunities to work in another ASEAN member country is in a medium rank ($\bar{x}$ = 3.39, SD = 0.528); the perception level of the free flow of skilled labour as a risk on the engineer's career while having more engineer competitors from the ASEAN member countries is in a medium rank ($\bar{x}$ = 3.29, SD = 0.645); the perception of the level on knowledge of MRAs is in a medium ranking ($\bar{x}$ = 3.04, SD = 0.956).

Therefore, the top three rankings from Table 4.16 show how strong the perception of respondents was on ASEAN MRAs on engineering services. The first place is the perception level of the free flow of skilled labour to increase the

opportunities to work in another ASEAN member countries, and second place is the perception level of the free flow of skilled labour as a risk on the engineer's career while having more engineer competitors from the ASEAN member countries. The third place is the perception level of the free flow of skilled labour in the AEC having a positive effect with the engineer's career.

Table 4.17 Descriptive analysis of the overall perception of the AEC and its environment and the respondents' agreement levels

Description	$\bar{x}$	SD	Level	Rank
Overall, receiving channel of information about the AEC and its environment.	3.39	0.795	Medium	5
Overall, government policy about the AEC and its environment	3.41	0.556	High	4
Overall, cultural diversity	4.07	0.678	High	1
Overall, economic growth	3.60	0.696	High	3
Overall, widely used technology	3.93	0.606	High	2
Overall, ASEAN Mutual Recognition Arrangement on engineering services	3.10	0.404	Medium	6
Total	3.50	0.586	High	

Table 4.17 shows the results of the perception level of respondents on overall factors about the AEC and its environment with the overall average ($\bar{x}$) of 3.50 and a standard deviation (SD) of 0.586. In addition, the overall perception of the receiving channel of information is in a medium rank ($\bar{x}$ = 3.39, SD = 0.795); the overall perception level of the government policy about the AEC and its environment is in a high ranking ($\bar{x}$ = 3.41, SD = 0.556); the overall perception level of cultural diversity is in a high rank ($\bar{x}$ = 4.07, SD = 0.678); the overall of the perception level on economic growth is in a high rank ($\bar{x}$ = 3.60, SD = 0.696); the overall of the perception level of widely used technology among AEC members is in high ranking ($\bar{x}$ = 3.93, SD = 0.606) and the overall perception level of the ASEAN MRAs on engineering services is in a medium rank ($\bar{x}$ = 3.10, SD = 0.404). Therefore, the top three rankings from Table 4.17 show the overall perception level of the various factors. The first place is the perception level of cultural diversity, and the second place is the perception level of

widely used technology among AEC members. The third place is the perception level of economic growth.

Table 4.18 Descriptive analysis of decision making level to develop foreign language skills of the respondents

Description	$\bar{x}$	SD	Level	Rank
TV media about the AEC had an influence on your decision making to develop foreign language skills	4.08	0.874	High	1
Printing media about the AEC had an influence on your decision making to develop foreign language skills	3.46	1.228	High	6
Verbal communication about the AEC from your friends, colleagues, or supervisor had an influence on your decision making to develop foreign language skills	3.93	0.955	High	2
Websites or social media about the AEC had an influence on your decision making to develop foreign language skills	4.08	0.889	High	1
Billboards or Signboards about the AEC had an influence on your decision making to develop foreign language skills	2.78	1.015	Medium	10
Radio programs about the AEC had an influence on your decision making to develop foreign language skills	3.08	0.889	Medium	9
The government policy about the AEC had an influence on your decision making to develop foreign language skills	3.37	0.829	High	7
Cultural diversity in the AEC had an influence on your decision making to develop foreign language skills	3.55	1.015	High	5
Economic growth from the AEC had an influence on your decision making to develop foreign language skills	3.74	1.014	High	3
The widely used technological from the AEC had an influence on your decision making to develop foreign language skills	3.61	1.041	High	4
The ASEAN Mutual recognition arrangement in engineering services had an influence on your decision making to develop foreign language skills	3.23	1.155	Medium	8
Total	3.51	0.621	High	

Table 4.18 shows the results of the decision making level of the respondents with the overall average ($\bar{x}$) of 3.51 and a standard deviation (SD) of 0.621. In addition, the decision making level to develop foreign language skills effected from TV programs is in a high ranking ($\bar{x}$ = 4.08, SD = 0.874); the decision making level to develop foreign language skills through printing media about the AEC is in a high ranking ($\bar{x}$ = 3.46, SD = 1.228); the decision making level to develop foreign language skills effected from verbal communication is in high ranking ($\bar{x}$ = 3.93, SD = 0.955); the decision making level to develop foreign language skills effected from the internet use is in a high ranking ($\bar{x}$ = 4.08, SD = 0.889); the decision making level to develop foreign language skills effected from billboards is in a medium ranking ($\bar{x}$ = 2.78, SD = 0.102); the decision making level to develop foreign language skills effected from radio programs is in a medium ranking ($\bar{x}$ = 3.08, SD = 0.889); the decision making level to develop foreign language skills effected from government policy is in a medium ranking ($\bar{x}$ = 3.37, SD = 0.829); the decision making level to develop foreign language skills effected from cultural diversity is in a high ranking ($\bar{x}$ = 3.55, SD = 1.015); the decision making level to develop foreign language skills effected from economic growth is in a high ranking ($\bar{x}$ = 3.74, SD = 1.014); the decision making level to develop foreign language skills effected from widely used technology is also in a high ranking ($\bar{x}$ = 3.61, SD = 1.041); and finally, the decision making level to develop foreign language skills effected from ASEAN MRAs on engineering services is in a medium ranking ($\bar{x}$ = 3.23, SD = 1.155).

Therefore, the top three rankings from Table 4.18 show the decision making level to develop foreign language skills and the various factors. The first place is the decision making to develop foreign language skills effected from TV programs and the internet, which are both in the same ranking. The second place is the decision making to develop foreign language skills effected from verbal communication, and the third place is the decision making to develop foreign language skills effected from economic growth.

4.5 Inferential analysis: One way ANOVA and Multiple regression analysis

This section is for hypothesis testing which was separated in to three statistical methods.

1. Independent t-test to analyze nominal scale at two levels with the interval scale (perception of the AEC and its environment)

2. One way ANOVA for analyzing demographic data (nominal scale more than two levels) with the perception of the AEC and its environment (interval scale)

3. Multiple regression analysis for analyzing the factors that influence the perception level of the AEC and its environment on the decision making to develop foreign language skills.

4.5.1 Test hypothesis H1: Finding the relationship between demographics of the respondents and the perception of the AEC and its environment

H1: Demographics has a significant relationship on the perception of engineers and of the AEC and its environment

H1a$_0$; Gender has no significant relationship on the perception of engineers of the AEC and its environment

H1a; Gender has a significant relationship on the perception of engineers of the AEC and its environment.

Table 4.19 The results from an independent t-test for comparing the means of gender differentiation and the perception of the AEC and its environment

Gender	$\bar{x}$	SD	t	Sig
Male	3.48	0.622	-0.741	0.460
Female	3.54	0.492		

*Significant at or below 0.05 level

From the Table 4.19, the sig is 0.460 which is greater than 0.05 (the significant level) which means the hypothesis **H$_0$ is accepted.**

There is no significant relationship between gender and the perception of engineers of the AEC and its environment.

H1b $_0$; Age has no significant relationship on the perception of engineers of the AEC and its environment

H1b; Age has a significant relationship on the perception of engineers of the AEC and its environment

Table 4.20 The results from One way ANOVA between age and the perception of the AEC and its environment of the respondents

Age	$\bar{x}$	SD	F	Sig
21 - 30 years old	3.44	0.600	1.400	0.243
31 - 40 years old	3.57	0.576		
41 - 50 years old	3.49	0.523		
51 - 60 years old	3.77	0.586		

*Significant at or below 0.05 level

Table 4.20 shows the results from one way ANOVA, F = 1.400, sig = 0.243 which is greater than 0.05 (the significant level) which means it is possible to **accept the null hypothesis**.

There is no significant relationship between age and the perception of engineers of the AEC and its environment.

H1c 0: Marital status has no significant relationship on the perception of engineers of the AEC and its environment

H1c; Marital status has a significant relationship on the perception of engineers of the AEC and its environment

Table 4.21 The results from One way ANOVA between marital status and the perception of the AEC and its environment of the respondents

Marital status	$\bar{x}$	SD	F	Sig
Single	3.48	0.553	1.939	0.146
Married	3.49	0.623		
Divorced or separated	4.16	0.068		

*Significant at or below 0.05 level

Table 4.21 shows the results from one way ANOVA, F = 1.939, sig = 0.146 which is greater than 0.05 (the significant level) which means it is possible to **accept the null hypothesis**.

There is no significant relationship between marital status and the perception of engineers of the AEC and its environment.

H1d $_0$: Education levels has no significant relationship on the perception of engineers of the AEC and its environment

H1d; Education levels has a significant relationship on the perception of engineers of the AEC and its environment

Table 4.22 The results from One way ANOVA between education levels and the perception of the AEC and its environment of the respondents

Education level	$\bar{x}$	SD	F	sig
Diploma	3.33	0.433	14.562	0.000*
Bachelor degree	3.44	0.551		
Master degree	3.77	0.556		
Doctorate	4.16	0.060		

*Significant at or below 0.05 level

Table 4.22 shows the results from one way ANOVA, F = 14.564, sig = 0.000 which is less than 0.05 (significant level at 0.05) which means it is possible to **reject the null hypothesis**.

Education levels had a significant relationship on the perception of engineers of the AEC and its environment.

In addition to comparing the different means within the variables group namely a Diploma, Bachelor's degree, Master's degree, and Doctorate, the researcher chose to use the Scheffé method to analyze the data, as the following Table 4.23 demonstrates:

Table 4.23 Mean difference within the group (education level)

Education level	$\bar{x}2$	$\bar{x}3$	$\bar{x}4$
Diploma ($\bar{x}1$)	-0.393	-0.269	-0.619
Bachelor's degree ($\bar{x}2$)	-	0.124	-0.225
Master's degree ($\bar{x}3$)		-	-0.350
Doctorate ($\bar{x}4$)			

*Significant at or below 0.05 level

The results from Table 4.23 show that the diploma level of education has significant difference from a Bachelor's degree and Master's degree (significance level at 0.05). While comparing the mean difference within the group, the Bachelor's degree, and Master's degree has no significant difference.

H1e $_0$: Income levels has no significant relationship on the perception of engineers of the AEC and its environment

H1e; Income levels has a significant relationship on the perception of engineers of the AEC and its environment

Table 4.24 The results from One way ANOVA between monthly income levels and the perception of the AEC and its environment of the respondents

Monthly income	$\bar{x}$	SD	F	sig
Less than 15,000 THB	2.92	0.494	5.729	0.000*
15,001 - 25,000 THB	3.45	0.548		
25,001 - 35,000 THB	3.37	0.607		
35,001 - 45,000 THB	3.74	0.514		
More than 45,001 THB	3.50	0.645		

*Significant at or below 0.05 level

Table 4.24 shows the resuls from one way ANOVA, F = 5.729, sig = 0.000 which is less than 0.05 (significant level at 0.05) which means it is possible to **reject the null hypothesis**: **Income levels had significant relationship on the perception of engineers on AEC and its environment.** In addition to comparing the different means within the variables group (monthly income levels), the researcher chose to use the Scheffé method to analyze the data, as presented here in Table 4.25:

Table 4.25 Mean difference within the group (monthly income level)

Monthly income	$\bar{x}2$	$\bar{x}3$	$\bar{x}4$	$\bar{x}5$
Less than 15,000 THB ($\bar{x}1$)	-0.620	-0.492	-0.787	-0.512
15,001 - 25,000 THB ($\bar{x}2$)	-	0.128	-0.168	0.108
25,001 - 35,000 THB ($\bar{x}3$)		-	-0.295	-0.020
35,001 - 45,000 THB ($\bar{x}4$)			-	0.275
More than 45,001 THB ($\bar{x}5$)				-

*Significant at or below 0.05 level

The results from Table 4.25 show that the respondents whose income level were less than 15,000 THB per month had a significant mean difference with the respondents whose income level was the in range of 15,001- 25,000 THB and also the range of 35,001-45,000 THB (significant level at 0.05). The results also show the

respondents whose income level was in the range of 25,001-35,000 THB per month had a significant mean difference with the respondents whose income level was in the range of 35,001-45,000 THB (significant level at 0.05).

H1f $_0$: Years of work experience has no significant relationship on the perception of engineers of the AEC and its environment

H1f; Years of work experience has a significant relationship on the perception of engineers of the AEC and its environment

Table 4.26 The results from One way ANOVA between years of work experience and the perception of the AEC and its environment of the respondents

Years of work	$\bar{x}$	SD	F	sig
Lower than 5 years	3.47	0.564	1.122	0.349
6 - 10 years	3.58	0.632		
11 - 15 years	3.41	0.578		
16 - 20 years	3.36	0.312		
21 - 25 years	3.44	0.661		
More than 25 years	4.16	0.060		

*Significant at or below 0.05 level

Table 4.26 shows the results from one way ANOVA, F = 0.652, sig = 0.349 which is greater than 0.05 (significant level at 0.05) which means it is possible to **accept the null hypothesis**: **There is no significant relationship between the number of work experience and the perception of engineers of the AEC and its environment.**

H1g $_0$: Engineering category has no significant relationship on the perception of engineers of the AEC and its environment

H1g: Engineering category has a significant relationship on the perception of engineers of the AEC and its environment

Table 4.27 The results from One way ANOVA between the engineering category and the perception of the AEC and its environment of the respondents

Engineering category	$\bar{x}$	SD	F	sig
Mechanical	3.48	0.643	5.019	0.000*
Civil	3.55	0.535		
Electrical	3.64	0.553		
Industrial	3.69	0.509		
Chemical	3.23	0.543		
Environmental	3.08	0.476		
Others	3.50	0.319		

*Significant at or below 0.05 level

Table 4.27 shows the results from one way ANOVA, F = 5.019, sig = 0.000 which is less than 0.05 (significant level at 0.05) which means it is possible to **reject the null hypothesis**.

Engineering category had a significant relationship on the perception of engineers of the AEC and its environment.

In addition to comparing the different means within the variables group (engineering category), the researcher chose to use Scheffé method to analyze the data, which is presented here in Table 4.28:

Table 4.28 Mean difference within the group (engineering category)

Engineering category	$\bar{x}2$	$\bar{x}3$	$\bar{x}4$	$\bar{x}5$	$\bar{x}6$	$\bar{x}7$
Mechanical ($\bar{x}1$)	-0.105	-0.133	-0.178	0.137	0.375	-0.338
Civil ($\bar{x}2$)	-	-0.028	-0.072	0.242	0.481	-0.233
Electrical ($\bar{x}3$)		-	-0.044	0.270	0.509	-0.205
Industrial ($\bar{x}4$)			-	0.314	0.553	-0.161
Chemical ($\bar{x}5$)				-	0.238	-0.475
Environmental ($\bar{x}6$)					-	-0.713
Others ($\bar{x}7$)						

*Significant at or below 0.05 level

The results from Table 4.28 shows that the respondents who worked within the industrial engineering field had a significant difference mean between the respondents who were working in the environment engineering field. Thus, from the average mean

point, the industrial engineer had a higher perception of the AEC than the environment engineers.

4.5.2 Test hypotheses H2: Finding the relationship between company characteristics and the perception of the AEC and its environment

H2: Company characteristics has a significant relationship on the perception of engineers of the AEC and its environment

H2a $_0$; Size of the company has no significant relationship on the perception of engineers of the AEC and its environment

H2a; Size of the company has a significant relationship on perception of engineers of the AEC and its environment

Table 4.29 The results from One way ANOVA between company size and the perception of the AEC and its environment of the respondents

Company size	$\bar{x}$	SD	F	sig
Small	2.76	0.299	536.037	0.000*
Medium	3.46	0.168		
Large	4.02	0.271		

*Significant at or below 0.05 level

Table 4.29 shows the results from one way ANOVA, F = 536.037, sig = 0.000 which is less than 0.05 (significant level at 0.05) which means it is possible to **reject the null hypothesis**. **The size of the company has a significant relationship with the perception of the AEC and its environment.**

Moreover, from the $\bar{x}$ data, as shown in Table 4.29, this represents the respondents working in a large size company had the higher perception of the AEC and its environment more than engineers working in the other two company sizes.

In addition to comparing the difference of means within the variables group (company size), the researcher chose to use Scheffé method to analyze the data, as is presented in the following Table 4.30:

Table 4.30 Mean difference within each group (company size)

Company size	$\bar{x}2$	$\bar{x}3$
Small ($\bar{x}1$)	-0.873*	-0.106*
Medium ($\bar{x}2$)	-	-0.186*
Large ($\bar{x}3$)		-

*Significant at or below 0.05 level

The results from Table 4.30 shows that the respondents who were working in a small company had a significant difference in mean between the respondents who were working in a medium size and large size company. The results also show that the respondents who were working in a medium size company had a significant difference of mean between the respondents who were working in a large company.

H2b $_0$: Industrial category has no significant relationship on the perception of engineers of the AEC and its environment

H2b: Industrial category has a significant relationship on the perception of engineers of the AEC and its environment

Table 4.31 The results from One way ANOVA between industrial category and the perception of the AEC and its environment of the respondents

Industrial category	$\bar{x}$	SD	F	sig
Chemical product/Paint/Fertilizer	3.44	0.155	259.982	0.000*
Cloth/leather/textile	2.68	0.224		
Rubber/Plastic/Imitation leather	3.57	0.365		
Electronics/scientific equipment	4.07	0.168		
Metal/Steel	4.01	0.108		
Automobiles	4.11	0.117		
Food/Paper/Printing	2.72	0.227		
Others	3.11	0.157		

*Significant at or below 0.05 level

Table 4.31 shows the results from one way ANOVA, F = 259.982, sig = 0.000 which is less than 0.05 (the significant level), which means it is possible to **reject the null hypothesis. There is a significant relationship between industrial category and the perception of engineers of the AEC and its environment**.

In addition to comparing the difference of means within the variables group (industrial category), the researcher chose to use Scheffé method to analyze the data, as is presented in the following Table 4.32:

Table 4.32 Mean different within group (Industry category)

Industrial category	**$\bar{x}2$**	**$\bar{x}3$**	**$\bar{x}4$**	**$\bar{x}5$**	**$\bar{x}6$**	**$\bar{x}7$**	**$\bar{x}8$**
Chemical product/ Paint/Fertilizer ($\bar{x}1$)	0.929	-0.043*	-0.196*	-0.213*	-0.226*	0.928*	0.348*
Cloth/leather/ textile ($\bar{x}2$)	-	-0.971*	-1.125*	-1.141*	-1.155*	-0.000*	-0.581*
Rubber/Plastic/ Imitation leather ($\bar{x}3$)		-	-0.153*	-0.170*	-0.183*	0.971	0.391*
Electronics/ scientific equipment ($\bar{x}4$)			-	-0.157*	-0.030*	1.124	0.544
Metal/Steel ($\bar{x}5$)				-	-0.013*	1.141	0.560
Automobiles ($\bar{x}6$)					-	1.154	0.574
Food/Paper/ Printing ($\bar{x}7$)						-	-0.580*
Others ($\bar{x}8$)							-

*Significant at or below 0.05 level

The results from Table 4.32 shows that the respondents who were working in the chemical or paint or fertilizer industry had a significant difference in mean between the respondents who were working in other industries ($\bar{x}2$, $\bar{x}4$, $\bar{x}5$, $\bar{x}6$, $\bar{x}7$, $\bar{x}8$), except the respondents who were working in the cloth, leather or textile industry ($\bar{x}2$).

The respondents who were working in cloth or leather or textile industry had a significant difference mean between the respondents who were working in other industries ($\bar{x}3$, $\bar{x}4$, $\bar{x}5$, $\bar{x}6$, $\bar{x}8$), except the respondents who were working in the food or paper or printing industry ($\bar{x}7$).

The respondents who were working in rubber, plastic, and imitation leather industry had a significant difference in mean between the respondents who were working in others industries ($\bar{x}4$, $\bar{x}5$, $\bar{x}6$, $\bar{x}8$).

The respondents who were working in electronics, and scientific equipment industry had a significant difference mean between the respondents who were working in others industries ($\bar{x}7$, $\bar{x}8$), except the respondents who were working in the metal, steel and the automobile industry ($\bar{x}5$, $\bar{x}6$).

The respondents who were working in metal and steel industry had a significant difference in mean between the respondents who were working in others industries ($\bar{x}7$, $\bar{x}8$), except the respondents who were working in automobile industry ($\bar{x}6$).

The respondents who were working in the automobile industry had a significant difference mean between the respondents who were working in others industries ($\bar{x}7$, $\bar{x}8$).

The respondents who were working in food, paper and printing industry had a significant difference mean between the respondents who were working in others industries ($\bar{x}8$).

H2c $_0$: Company policy has no significant relationship on the perception of engineers of teh AEC and its environment

H2c: Company policy has a significant relationship on the perception of engineers of the AEC and its environment

Table 4.33 The results from the independence t-test between company policy in terms of internal training about the AEC and the perception of the AEC and its environment

Company policy	t	Sig
AEC internal training course	24.167	0.000*
Work trip across AEC countries	21.436	0.000*
The multinational corporation company	17.323	0.000*
Have a plan to expand to the AEC countries	5.370	0.000*
Have new business strategies for the AEC	5.307	0.000*
Company preparedness for the AEC	-0.998	0.319

*Significant at or below 0.05 level

Table 4.33 shows the results from the independent t-test analysis, for company policy 1, t = 24.167, sig = 0.000 which is less than 0.05 (the significant level). The

results from company policy 2 independent t-test analysis: t = 21.436, sig = 0.000 which is less than 0.05 (the significant level). The results from company policy 3 independent t-test analysis, t = 17.323, sig = 0.000 which is less than 0.05 (the significant level)**.** The results from company policy 4 independent t-test analysis, gave t = 5.370, sig = 0.000 which is less than 0.05 (the significant level). The results from company policy 5 independent t-test analysis, t = 5.037, sig = 0.000 which is less than 0.05 (the significant level). The results from company policy 6 independent t-test analysis, t = -0.998, sig = 0.319 which is greater than 0.05 (the significant level).

There is a significant relationship between company policy and the perception of engineers of the AEC and its environment.

4.5.4 Test hypotheses H4: Finding what influences between the perception level of the AEC and its environment and the decision making to develop foreign language skills.

H4$_0$: Perception of engineers of the AEC and its environment has no influence on decision making by engineers to develop their foreign language skills

H4: Perception of engineers of the AEC and its environment has an influence on decision making by engineers to develop their foreign language skill.

4.5.4.1 Pearson's correlation coefficient

Table 4.34 Pearson's correlation coefficient within the perception level of the AEC group and the decision making level to develop foreign language skills

	X1	X2	X3	X4	X5	X6	Y
X1	1						
X2	*0.290	1					
X3	***0.821**	*0.406	1				
X4	*0.544	*0.429	*0.660	1			
X5	*0.454	*0.381	*0.568	*0.509	1		
X6	*0.225	***0.186**	*0.296	*0.328	*0.309	1	
Y	*0.634	*0.322	*0.737	*0.567	*0.483	*0.412	1

*Significant at or below 0.05 level

From Table 4.34 where:

Y = the decision making level to develop foreign language skills
x1 = the perception level of the AEC through receiving channel
x2 = the perception level of the AEC through government policy
x3 = the perception level of the AEC through cultural diversity
x4 = the perception level of the AEC through economic growth
x5= the perception level of the AEC through widely used technology
x6= the perception level of the AEC through ASEAN MRAs on engineering services

Table 4.34 shows that the Pearson's correlation coefficients (r) between independent variables are in the range of 0.186-0.821 which were significant correlated at statistical level 0.01. There is a minimum positive significant relationship between the perception of the AEC in terms of government policy and the perception of the AEC in terms of ASEAN MRAs on engineering services. There is a maximum positive significant relationship between the perception of the AEC in terms of cultural diversity and the perception of the AEC in terms of information receiving channels.

Table 4.34 shows the results from the Pearson's correlation statistics. The correlation coefficient between receiving channels about the AEC and the decision making by engineers to develop their foreign language skills is 0.637 and the sig is 0.000 which is less than 0.05 (the significant level at 0.05). **There is strong positive significant relationship between receiving channels about the AEC and the decision making by engineers to develop their foreign language skills.**

Table 4.34 shows the results from the Pearson's correlation statistics. The correlation coefficient between government policy and the decision making by engineers to develop their foreign language skills is 0.322 and the sig is 0.000 which is less than 0.05 (the significant level at 0.05). **There is a weak, positive significant relationship between the government policy and the decision making by engineers to develop their foreign language skills.**

Table 4.34 shows the results from the Pearson's correlation statistics. The correlation coefficient between the cultural diversity and the decision making by engineers to develop their foreign language skills is 0.737 and the sig is 0.000 which is

less than 0.05 (the significant level at 0.05). **There is a strong positive significant relationship between the cultural diversity and the decision making by engineers to develop their foreign language skills.**

Table 4.34 shows the results from the Pearson's correlation statistics. The correlation coefficient between economic growth and the decision making by engineers to develop their foreign language skills is 0.567 and the sig is 0.000 which is less than 0.05 (the significant level at 0.05). **There is a moderate positive significant relationship between economic growth and the decision making by engineers to develop their foreign language skills.**

Table 4.34 shows the results from the Pearson's correlation statistics. The correlation coefficient between widely used technology and the decision making by engineers to develop their foreign language skills is 0.483 and the sig is 0.000 which is less than 0.05 (the significant level at 0.05). **There is a moderate positive significant relationship between the widely used technology and the decision making by engineers to develop their foreign language skills.**

Table 4.34 shows the results from the Pearson's correlation statistics. The correlation coefficient between ASEAN MRAs on engineering services and the decision making by engineers to develop their foreign language skills is 0.412 and the sig is 0.000 which is less than 0.05 (the significant level at 0.05). **There is a moderate positive significant relationship between the MRAs in terms of engineering services and the decision making by engineers to develop their foreign language skills.**

The researcher used the Pearson's correlation coefficient to test if there was a linear relationship between the perception of the AEC and decision making to develop foreign language skills. The researcher then used the SPSS program to compute factors that influenced decision making by engineers after that.

4.5.4.2 Enter Multiple Regression analysis

In the program of the SPSS, in general when this program analyzes the multiple regression, the output will show at least four tables simultaneously. The main tables that the researcher will use to interpret the data will be: 1) the variables entered and removed; table 2) model summary; table 3) ANOVA table; and 4) coefficient

table. In this study, the output displays every item was including the regression model via the approach of entering material.

This process is to analyze the independent variables (X) which can be used for predicting the independent variables (Y), therefore Pearson's correlation in the previous stage found that all of the six independent variables had a statistical significant relationship with the decision making to develop foreign language skills (Y).

Table 4.35 Regression analysis of the perception level of the AEC and its environment and the decision making to develop foreign language skills (Model summary)

Model Summary				
Model	**R**	**R-square**	**Adjusted R-square**	**Std. Error of the Estimate**
1	0.770	0.593	0.583	0.401

From the Table 4.35, the Model summary shows the adjusted r-square from model 1 = 0.583. The standard error of the estimate from model number 1 is 0.401. The adjusted r-square points to the percentage of the factors that can account, **from the model number 1 the adjusted r-square = 0.583 which shows the percentage of the factors that can account for 58.4% of the variation of the perception of the AEC and its environment.**

Table 4.36 Regression analysis of the perception level of the AEC and its environment and the decision making to develop foreign language skills (ANOVA)

ANOVA		
Model	**F**	**Sig**
1	59.543	0.000*

*Significant at or below 0.05 level

Table 4.36 represents the ANOVA analysis, where the Model number 1 shows F= 59.543, sig = 0.000 which is less than 0.05 (the significant level). **Therefore, the regression model was good to test.**

Table 4.37 Regression analysis of the perception level of the AEC and its environment and the decision making to develop foreign language skills (Coefficient)

Coefficients				
Independent variables	**B**	**Beta**	**t**	**Sig**
(Constant)	-0.034		-0.140	0.889
Channel (x1)	0.077	0.099	1.381	0.169
Government (x2)	-0.008	-0.008	-0.161	0.872
Cultural (x3)	0.475	0.519	6.196	**0.000***
Economic (x4)	0.080	0.090	1.568	0.118
Technology (x5)	0.041	0.040	0.773	0.441
MRAs (x6)	0.300	0.196	4.456	**0.000***

*Significant at or below 0.05 level

Table 4.37 shows the perception of the AEC in terms of cultural diversity has a sig = 0.000 (less than significant level = 0.05), and the perception of the AEC in terms of MRAs on engineering services as sig = 0.000 (less than significant level = 0.05). There were only two factors (the perception of cultural diversity and the perception of ASEAN MRAs on engineering services) that influenced the decision making to develop foreign language skills. Thus, the perception of the AEC and its environment has an influence on the Thai engineer's decision making to develop foreign language skills, which means it is possible to **reject the null hypothesis.**

Therefore, from the multiple regression analysis, the perception of the AEC in terms of cultural diversity and the perception of the AEC in terms of MRAs on engineering services has an influence on the decision making by Thai engineers to develop their foreign language skills.

Table 4.37 shows the beta of receiving information channel = 0.099, the beta of the Thai government = -0.008, the beta of cultural diversity = 0.519, the beta of economic growth = 0.090, the beta of widely used technology = 0.040, and the beta of MRAs = 0.196. From in data in Table 4.37 the researcher was able to create the regression model as follows:

$$Y = -0.034 + 0.077x1 - 0.008x2 + 0.475x3 + 0.08x4 + 0.041x5 + 0.3x6$$

Where; Y = the decision making level to develop foreign language skills

x1 = the perception level of the AEC through receiving channel

x2 = the perception level of the AEC through government policy

x3 = the perception level of the AEC through cultural diversity

x4 = the perception level of the AEC through economic growth

x5= the perception level of the AEC through widely used technology

x6= the perception level of the AEC through ASEAN MRAs on engineering services

CHAPTER 5
SUMMARY, CONCLUSION & RECOMMENDATIONS

In this chapter, the researcher will summarize the hypothesis testing with the conclusion and recommendation of the research topic that assessed: "A study on the relationship between company characteristics, demography of engineers and their perception of the AEC and its environment influencing the decision to develop their foreign language skills, in Bang Poo industrial area, Samuthprakarn, Thailand."

5.1 Summary and Conclusion of finding

This study had three main objectives: 1) To identify the relationship between demographics and the perception of Thai engineers of the AEC and its environment. 2) To identify the relationship between company characteristics and the perception of engineers of the AEC and its environment. 3) To identify the influence of the perception of engineers of the AEC and its environment and the decision making by engineers to develop their foreign language skills. This study used quantitative approaches to research. The target sample population in this study was engineers who were working in the Bang Poo industrial area. The researcher used Taro Yamane's calculation to analyze the sample size which was 252. The researcher chose the stratified sampling method to collect the data. Concerning the research hypotheses, there were three main hypothesis. The first focused on demographic data, the second focused on company characteristics and company policy data, and the third focused on the perception of the AEC and decision making to develop foreign language skills which was evaluated using an interval scale.

The demographic data, company characteristics and the respondents' opinion levels were analyzed by using descriptive statistics that presented the frequency, mean, percentage, and SD (standard deviation), therefore, the inferential statistics that the researcher used was Pearson's correlation coefficient and multiple regression analysis. The results were clarified as follows:

Section one: Various demographic data was clarified in different categories including gender, age, marital status, education level, years of work experience, and the engineering category the respondents' worked in. The researcher found that from

the 252 respondents, the gender division was: male 70.2%, female 29.8%. The highest percentage in the age range was in the range of 21-30 years old (53.2%). Most of the marital status of the respondents were single at 54%. The highest percentage of the education level was a bachelor's degree, at 63.9%. The highest percentage of the monthly income level was in the range of 15,001-25,000 THB for 38.9%. The highest percentage of years of work experience was in the range of less than 5 years for 48.4%. The majority of the engineering category where the respondent's worked was in mechanical engineering for 26.6%.

Section two: Focusing on the company characteristics, the data was clarified in several different topics, including the company size, the industrial category and the company policy. The researcher found that most of the respondents were working in a large size of company for 42.9%. The highest percentage of the company's industrial category was in fertilizer, paint and chemical product (21.8%). In terms of the company policy, the researcher divided this into various topics, covering internal training, work trip across AEC member countries, company structure, business strategy for the AEC, and the preparedness for the AEC.

Section three: This part focused on the respondents' perception of the AEC levels from various sources that might be related to the individual person's perception of the AEC and its environment, such as receiving information about the AEC through many channels: the TV, the radio, printing media, the internet, billboards, and verbal communication. The highest ranking was receiving information through TV programs. The average mean score of all factors was in between 3.09 - 4.07 scores, which falls within the medium to high perception level.

Section four: This part focused on the respondents' decision making level to develop their foreign language skills which related to their perception of the AEC and its environment. The average mean scores of this part was 3.51 and the SD = 0.621.

Section five: This part focused on hypothesis testing and the researcher used inferential statistics to prove which of the hypotheses were acceptable. This was divided into three main parts from the statistical method. To analyze the relationship between demographic data or company characteristics, with two levels the researcher chose to use an independent t-test analysis to determine the significant difference in mean between two sets of data.

In the case of the demographic data or company characteristics, when there were more than two levels the researcher chose One-way ANOVA to find the difference in the means between groups.

For the perception levels and decision making level, the researcher chose the Pearson's correlation coefficient to analyze the correlation between variables. Therefore the Pearson correlation analysis showed there was a positive significant relationship which was in the range of 0.322-0.634, between the perception of the AEC through eleven variables (TV, radio, verbal communication, billboard, printing media, websites or social media, government policy, cultural diversity, economic growth, widely used technology, and MRAs on engineering services) and decision making level to develop foreign language skills, and p-value less than the significant level (0.05).

The researcher chose the multiple regression analysis to compute the best fit line between dependent variables and independent variables to finding the factors that influenced between perception variables and decision making level. After using the enter entrance, the researcher created the linear regression equation for predicted Y (decision making level) which is the predictor (x) that gives the best fit line in perception of the AEC in terms of cultural diversity and perception of the AEC in terms of ASEAN MRAs on engineering services with the account for 58.4% (adjusted r-square 0.584) of the variation of the perception of the AEC and its environment.

Due to there are many different method and eleven items of hypotheses, the researcher described presents the results in the following Table 5.1:

Table 5.1 The results of hypothesis testing

Hypothesis	Results
$H1a_0$: Gender has no significant relationship on the perception of engineers of the AEC and its environment. **H1a :** Gender has a significant relationship on the perception of engineers of the AEC and its environment.	**Accepted $H1a_0$**

Table 5.1 The results of hypothesis testing (Cont.)

Hypothesis	Results
H1b$_0$: Age has no significant relationship on the perception of engineers of the AEC and its environment.	**Accepted**
H1b : Age has a significant relationship on perception of engineers of the AEC and its environment.	**H1b$_0$**
H1c $_0$: Marital status has no significant relationship on the perception of engineers of the AEC and its environment	**Accepted**
H1c : Marital status has a significant relationship on the perception of engineers of the AEC and its environment	**H1c$_0$**
H1d $_0$: Education levels has no significant relationship on the perception of engineers of the AEC and its environment	**Rejected**
H1d : Education levels has a significant relationship on the perception of engineers of the AEC and its environment	**H1d$_0$**
H1e $_0$: Income levels has no significant relationship on the perception of engineers of the AEC and its environment	**Rejected**
H1e : Income levels has a significant relationship on the perception of engineers of the AEC and its environment	**H1e$_0$**
H1f $_0$: Years of work experience has no significant relationship on the perception of engineers of the AEC and its environment	**Accepted**
H1f : Years of work experience has a significant relationship on the perception of engineers of the AEC and its environment	**H1f$_0$**
H1g $_0$: Engineering category has no significant relationship on the perception of engineers of the AEC and its environment	**Rejected**
H1g : Engineering category has a significant relationship on the perception of engineers of the AEC and its environment	**H1g$_0$**
H2a $_0$: Size of the company has no significant relationship on the perception of engineers of the AEC and its environment	**Rejected**
H2a : Size of the company has a significant relationship on the perception of engineers of the AEC and its environment	**H2a$_0$**

Table 5.1 The results of hypothesis testing (Cont.)

Hypothesis	Results
H2b $_0$: Industrial category has no significant relationship on the perception of engineers on AEC and its environment	**Rejected**
H2b : Industrial category has a significant relationship on the perception of engineers of the AEC and its environment	**H2b$_0$**
H2c $_0$: Company policy has no significant relationship on the perception of engineers of the AEC and its environment	**Rejected**
H2c: Company policy has a significant relationship on the perception of engineers of the AEC and its environment	**H2c$_0$**
H3$_0$: Perception of the AEC and its environment has no influence on decision making by engineers to develop their foreign language skills	**Rejected**
H3 : Perception of the AEC and its environment has an influence on decision making by engineers to develop their foreign language skills	**H3$_{a0}$**

5.2 Discussion

According to the hypothesis testing results, as shown above in Table 5.1, the researcher will divide the discussion into three main sections: 1) the demographic data; 2) the company characteristics; and 3) the perception of the AEC and its environment, and the decision making of engineers to develop their foreign language skills.

5.2.1 Discussion in terms of demography;

In this sections the researcher will offer an interpretation from the hypothesis H1a to H1g (7 items) as all of the hypotheses were in the demographic part which was the independent variables and the perception of engineers of the AEC and its environment was a dependent variable. Therefore, there were three independent variables: namely, education level, monthly income level, and engineering category that had a significant relationship with the perception of an engineer of the AEC and its environment. The rest of independent variables, namely gender, age, marital status, and years of work experience, had no significant relationship with the perception of an engineer of the AEC and its environment.

In addition to the education level, the Scheffé method noted that there was a significant mean difference within the education level group, thus the average mean from each level was increasing, as engineers with the lower education level also had the lower perception of the AEC and its environment.

In addition to the monthly income level, the Scheffé method point out that there was a significant mean difference within the income levels group. Thus, the average mean from the lower income level mostly tended to have the lower perception of the AEC and its environment.

In addition to the engineering category, the Scheffé method showed that there was a significant mean difference within the engineering category group. The results showed that the respondents who worked in the industrial engineering field had a different perception level of the AEC when compared with the respondents who were working in the environment engineering field. At this point the engineering category reflected the field of work, and the researcher found that from the different points of view in the case of the surrounding environment in terms of field of work, these factors could lead to the different perception levels of engineers of the AEC and its environment.

5.2.2 Discussion in terms of company characteristics;

In this section the researcher will offer an interpretation from the hypothesis H2a to H2c (3 items) as all of these hypotheses were in the company characteristics part which were the independent variables and the perception of engineers of the AEC and its environment was a dependent variable. Therefore, the researcher will assess all of the three independent variables, namely the company size, industry category, and company policy to see whether they had a significant relationship with the perception of engineers of the AEC and its environment.

In addition to the company size, the Scheffé method indicated that there was a significant mean difference within the company size group. Moreover, the average mean of the company size increased in the same direction as the perception level.

In addition to the industry category, the Scheffé method noted that there was a significant mean difference within the industry group. These results reflected the perception level of engineers of the AEC which came from the different industries, and were completely different.

In addition to the company policy, there were many different ways of the company policy. However, this research project mentioned only the internal training, the work trip or meeting across AEC member countries, the expanding plan in the future, the preparedness of the company for the upcoming AEC, the company structure, and new business strategy for the AEC. Therefore, the researcher found that the average mean score of perception of the AEC from the respondents who had attended the AEC internal training course had a higher perception when compared with the respondents who had not attended any training. This was the same as the respondents who had attended a work trip across AEC member countries and the respondents who had worked in a multinational corporation company, and also for the respondents who were working in the company which had a new business strategy. They reached a higher perception of the AEC.

5.2.3 Discussion in terms of perception that influence decision making;

In this section the researcher will offer an interpretation of the hypothesis H3 as this hypothesis was in the perception of engineers of the AEC and its environment. This part was the independent variables and the decision making of engineers to develop their foreign language skills was a dependent variable. Therefore, the perception level were categorized in various factors, namely the perception of the AEC and its environment through the receiving channels (TV, radio, internet, verbal communication, billboard, printing media) and also with government policy, cultural diversity, economic growth, widely used technological, and ASEAN MRAs on engineering services. The researcher chose the multiple regression analysis to investigate the factors that influenced the decision making of engineers. The results showed that there were two main factors that had an influence on the decision making by engineers to develop foreign language skills. The two were the perception of the AEC in terms of cultural diversity and the perception of the AEC in terms of MRAs on engineering services. These two factors were correlated in the positive direction with the decision making levels.

From the descriptive analysis, in the section assessing whether the respondents gain the perception about the AEC and its environment through various receiving channels, the results showed that the most popular channel was receiving information about the AEC by TV programs. The second ranking was the internet. The results

might oppose the recognized truth in the current situation, which is that the internet should be more popular for the younger generation, rather than working professionals. However, the mean score of perception between the TV and the internet had a very little difference ($\bar{x}_{tv}$ = 3.87, $\bar{x}_{internet}$ = 3.84). Also, the reason of the rise of viewers in digital TV this year increased by 24%, according to the Nation website (The Nation Multimedia, 2015). The NBTC secretary-general Takorn Tantasit stated: "Since the official launch of digital terrestrial TV in April, these channels' audience base has risen to 24% of the Kingdom's 23.5 million households, or 14.5 million viewers, up 7% since the launch. This figure excludes Channel 3, Channel 7 and Modernine TV, which simulcast their analog TV programmes on the digital platform." Another key driver is the NBTC's Bt690 vouchers being provided to every household since October for the purchase of digital TV set-top boxes or TV sets with built-in digital tuners. As mentioned previously, this offer might be influencing the viewer to pay more attention to TV programs.

From the descriptive analysis, in the section of whether the respondents gain the perception about the AEC and its environment through the Thai government policy or advertising activities which were provided by the government, the results showed that the respondents felt positive with the Thai government. The highest rank was down to the belief that Thai government is strongly leading Thailand towards the AEC. Additionally to this, since many years back, KPMG Thailand cooperated with the Department of International Trade Promotion, Ministry of Commerce, to organize a seminar on the AEC: Sharing Real Experiences "Get Ready For When It's Your Turn" on 23 May 2013. The seminar was aimed at providing a forum for discussion and exchange of experiences about the important issues that Thai business operators should prepare for, amidst the evolving trade and investment trend, particularly an increasingly important ASEAN market. It aimed to prepare the country to become a member of the ASEAN Economic Community (AEC) in 2015, so the Thai government has set a vision to make Thailand stronger and improve the quality of life of Asean people in general. The country strategy regarding the AEC is to promote Growth and Competitiveness to survive the middle income trap by using innovation and creativity. The strategy aims to increase R&D investment to add value to the manufacturing and service sectors. Also, it promotes infrastructure investment in order

to enhance the infrastructure quality to one day link transportation networks both domestically and overseas. This will help expand trade and investment opportunities for Thailand, strengthen the economic structure and create a buffer zone against any potential external vulnerability (KPMG, 2013).

At this point, the Thai government is focusing on improving the competitiveness in the AEC market and Thailand should improve in terms of technology and R&D. According to Dr. Jarunee Wonglimpiyarat (a member of the College of Innovation, Thammasat University, Bangkok) the Thai government has realized that the competitive position of the country cannot depend on the inexpensive labor under the increasingly fierce competition in the AEC market. Thailand needs to compete with the application of science, technology and innovation (STI) in driving economic growth. In responding to the challenges and opportunities of the AEC integration in 2015, the two major government agencies (National Science Technology and Innovation Policy Office and National Innovation Agency) under the Ministry of Science and Technology, have initiated the projects to strengthen the STI infrastructure. The National Science Technology and Innovation Policy Office and the National Innovation Agency (NIA) in collaboration with the College of Innovation, Thammasat University of Thailand, have developed the projects to support the national governance and enhance the national innovation system.

According to the newspaper Nation article (Pratruangkrai, 2014) the Thai government has launched three strategies in a bid to maximise the country's economic-growth potential following full implementation of the ASEAN Economic Community (AEC) by the end of 2015. The three strategies involve a plan to develop special economic zones in border areas and promote the growth of cross-border trade; enhance the competency and competitiveness of Thai enterprises to trade and invest outside Thailand; and establish business partnerships within each ASEAN member state, as well as with other countries, in order to promote Thailand as a regional trading.centre.

Due to all of the Thai government's task as mentioned above, the data presneted in the World Bank group website (group, 2015) that Thailand had the higher ranking in 'doing business' rising from rank 28 in 2014 to rank 26 in 2015.

Moreover, from the Bangkok Poll, which was conducted by the research centre

of Bangkok University on September 3-4, 2014, it recorded that 1,045 people from various parts of the country were polled. The results pointed out that most people (69.8%) were confident that the government of the present Thai Prime Minister Prayuth Chan-ocha will be able to improve Thailand's image as far as the corruption problem is concerned (PBS, 2014).

5.2.4 Limitation of the study

There were many limitations that were necessary in order to enable this research project to be completed. The researcher separated the main problems at the beginning. Firstly, there was no record found about the number of engineers who were working in the Bang Poo industry area reseach location. Secondly, there might be some lack in some details, because this study had a strict limitation of time for the collection of the data process. The researcher needed to contact the human resource development departments in the co-operating companies, or directly contact the respondents by email. Therefore, some of the engineers offered their time but some did not. Thirdly, the researcher applied the external factors that might be related with the dependent variables in this topic from the academic literature or textbooks. However, there could be lack in some variables or other factors which was not considered or included in this specific research project. Lastly, the research about the AEC topics has not been extensively studied previously, so it was hard to find the appropriate research that might be directly or indirectly involved with this topic, in covering the Thai engineer's perception of the AEC and its environment.

5.3 Recommendations for further research

There are some recommendation for the further research related to this, described as follows:

a) A study could further improve the sample to be a much wider target group. For example, to include the target population who are not engineers or select engineers in another location in Bangkok or in another province of Thailand.

b) A study could be more accurate thereby collecting a much larger sampling size, possibly being a minimum of 500 as the sample group.

c) A study to comprehensively use quantitative and qualitative research methodologies to investigate the factors related with the decision making to

develop foreign language skills would be beneficial. Also, a researcher could undertake interviews for a longer time, covering other topics about the AEC more to understand more about the other factors that might influence the decision making to develop a Thai worker's foreign language skills.

d) A future study should learn more about previous research topics, which might help to expand what directly and indirectly effects the perception of the AEC.

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APPENDIX A
SURVEY QUESTIONNAIR (ENGLISH)

Questionnaire (English version)

The main objective of this survey is to collect data from an engineer who is working in Bang Poo industrial Area, to fulfill in the research topic "A study on the relationship between company characteristics, demography of engineers and their perception of the AEC and its environment influencing the decision to develop their foreign language skills, in Bang Poo industrial area, Samuthprakarn, Thailand" in the MBA course of Stamford International University.

The survey was divided into 4 parts. Part 1 is about demographic data. Part 2 is about company characteristic. Part 3 is rating scale for evaluate the perception of the AEC and its environment of engineers. Part 4 is rating scale for evaluate the influencing factors which was effect with the decision making to develop foreign language skills.

Could you please read the question and answer carefully according to the instruction in each part.

Part 1 : Demographic data

Please, answer the question by mark this √ into ( ) with description which is most related with your opinion.

1. Gender ( ) Male ( ) Female

2. Age ( ) 21 – 30 years old ( ) 41 – 50 years old
( ) 31 – 40 years old ( ) 51 – 60 years old

3. Marital Status

( ) Single ( ) Married
( ) Divorced/Separated

4. Education

( ) Diploma/higher vocational education
( ) Bachelor's degree
( ) Master's degree
( ) Doctorate degree

5. Monthly Income

( ) Less than 15,000 THB
( ) 15,001 – 25,000 THB
( ) 25,001 – 35,000 THB
( ) 35,001 – 45,000 THB
( ) More than 45,001 THB

6. Years of work experience

( ) less than 5 years
( ) 6 – 10 years
( ) 11 – 15 years
( ) 16 – 20 years
( ) 21 – 25 years
( ) More than 25 years

7. Engineering Category

( ) Mechanical Engineer
( ) Civil Engineer
( ) Electrical Engineer
( ) Industrial Engineer
( ) Chemical Engineer
( ) Environmental Engineer
( ) Others Please, identify……..……

Part 2: Company characteristic

Please, answer the question by mark this √ in to the box with description which is most related with your opinion.

8. Size of your company

( ) Small company (the number of engineers less than 50)
( ) Medium company (the number of engineers 51-100)
( ) Large company (the number of engineers more than 101)

9. Industry category

( ) Fertilizer/paint/chemical product
( ) Textiles/leather/clothes
( ) Rubber/Plastic/imitation leather
( ) Electronics/Scientific equipment
( ) Metal/Steel
( ) Automobile
( ) Food/Paper/Printing
( ) Others

10. Company has the AEC training course for engineers

( ) Yes
( ) No

11. Company have meeting or training course or work trip for engineers located at AEC member countries (Brunei Darussalam, Indonesia, Philippines, Malaysia, Singapore, Laos, Cambodia, Myanmar or Vietnam)

( ) Yes
( ) No

12. Company have another branches or manufacturing in AEC member countries (Brunei Darussalam, Indonesia, Philippines, Malaysia, Singapore, Laos, Cambodia, Myanmar or Vietnam)

( ) Yes
( ) No

13. Company plans to expand into the AEC member countries (Brunei Darussalam, Indonesia, Philippines, Malaysia, Singapore, Laos, Cambodia, Myanmar or Vietnam)

( ) Yes
( ) No

14. Company has new business strategies for AEC

( ) Yes
( ) No

15. Company is well prepared for more challenging on AEC

( ) Yes
( ) No

Part 3: The perception of engineers of the AEC and its environment

This part has 6 main questions topics which is for evaluated the perception level of engineers from the external factors that may related with the perception on AEC and its environment. Please, rate the score which was the closest with your opinion in each question by using the following scale;

The Perception level	Lowest	Low	Average	High	Highest
Score	1	2	3	4	5

Part 3.1 - AEC receiving channel	**Perception level**				
	1	**2**	**3**	**4**	**5**
16. You received the information about AEC through Television Media such as Free TV or local cable TV	1	2	3	4	5
17. You received the information about AEC through Printing Media such as Newspaper/Magazine/journal	1	2	3	4	5
18. You received the informatin about AEC from friends or colleagues or your supervisor.	1	2	3	4	5
19. You received the information about AEC through internet or social media such as facebook, twitter	1	2	3	4	5
20. You received the information about AEC through Billboard or signboard	1	2	3	4	5
21. You received the information about AEC through Radio	1	2	3	4	5

Part 3.2 - Measuring the perception in term of Government policy					
22. The government has advertising activity about AEC	1	2	3	4	5
23. Thai government is well prepared for AEC	1	2	3	4	5
24. Thai government have plans for improving Thai's commerce to be ready on AEC	1	2	3	4	5
25. Thai government are strongly leading Thailand towards the AEC	1	2	3	4	5

Part 3.3 Measuring the perception in term of Cultural diversity					
26. You are open for cultural differentiation	1	2	3	4	5
27. You know the different between cultural across ASEAN and also learn from its	1	2	3	4	5
28. You are willing to exchange Thai culture with others ASEAN members	1	2	3	4	5
29. You are willing to exchange cultural towards one community.	1	2	3	4	5
30. You are proud on Thai culture and willing to disseminate Thai culture	1	2	3	4	5

Part 3.4 Measuring the perception in term of Economic growth					
31. The AEC had effected on your financial in the positive ways.	1	2	3	4	5
32. The AEC increasing your income	1	2	3	4	5
33. The AEC gain more challenging in term of business	1	2	3	4	5
34. The AEC gain more opportunity in term of business	1	2	3	4	5

Part 3.5 Measuring the perception in term of widely technological on the AEC					
35. Technology had effected with your career.	1	2	3	4	5
36. The AEC had made you to increase your technological potential.	1	2	3	4	5
37. The AEC had made you to be more enthusiastic to learning new technology	1	2	3	4	5

Part 3.6 Measuring the perception in term of ASEAN Mutual Recognition Arrangement on Engineering Services.					
38. The free flow of skilled labour on AEC had a positive effected with your career	1	2	3	4	5
39. The free flow of skilled labour on AEC had no effected on you	1	2	3	4	5
40. The free flow of skilled labour increasing the opportunities for you to work in another ASEAN member countries.	1	2	3	4	5
41. The free flow of skilled labour are risk with your career and have more engineer competitors from the ASEAN member countries.	1	2	3	4	5
42. You know the details of MRAs on engineering services	1	2	3	4	5

Part 4: Perception of Engineer of the AEC and its environment has influence on decision making by engineers to develop their foreign language skills

This part has 6 questions which is for evaluated the influencing level of the decision making to develop foreign languages skills from their perception on AEC and its environment. Please, rate the score which was the closest with your opinion in each question by using the following scale;

The decision making level	Strongly Disagree	Disagree	Neither disagree nor agree	Agree	Strongly Agree
Score	1	2	3	4	5

Part 4: Perception of Engineer on AEC and its environment has influence on decision making by engineers to develop their foreign language skills : Measuring the level of decision making	Decision making level				
	1	2	3	4	5
43. TV media about AEC have influence on your decision making to develop foreign language skills	1	2	3	4	5
44. Printing media about AEC have influence on your decision making to develop foreign language skills	1	2	3	4	5
45. Verbal communication about AEC from your friends, colleagues, or supervisor have influence on your decision making to develop foreign language skills	1	2	3	4	5
46. Websites or social media about AEC have influence on your decision making to develop foreign language skills	1	2	3	4	5
47. Billboards or Signboard about AEC have influence on your decision making to develop foreign language skills	1	2	3	4	5
48. Radio program about AEC have influence on your decision making to develop foreign language skills	1	2	3	4	5
49. The government policy about AEC have influence on your decision making to develop foreign language skills	1	2	3	4	5
50. Cultural diversity in AEC have influence on your decision making to develop foreign language skills	1	2	3	4	5
51. Economic growth from AEC have influence on your decision making to develop foreign language skills	1	2	3	4	5
52. The widely technological from AEC have influence on your decision making to develop foreign language skills	1	2	3	4	5
53. The ASEAN Mutual recognition arrangement in Engineering services have influence on your decision making to develop foreign language skills	1	2	3	4	5

Suggestion…………………………………………………………………………………
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APPENDIX B
SURVEY QUESTIONNAIR (THAI)

แบบสอบถามเพื่อทำการวิจัย

คำชี้แจงในการตอบแบบสอบถาม

วัตถุประสงค์หลักของแบบสอบถามฉบับนี้คือเพื่อเป็นการเก็บข้อมูลจากวิศวกรที่ทำงานในนิคมอุตสาหกรรมบางปู ข้อมูลทั้งหมดที่ได้จากแบบสอบถามนี้ จะนำไปวิเคราะห์ในวิทยานิพนธ์หัวข้อ “การศึกษาความสัมพันธ์ระหว่างลักษณะเฉพาะของบริษัท และหลักประชากรศาสตร์ ของวิศวกรในเขตอุตสาหกรรมบางปู จังหวัดสมุทรปราการ ประเทศไทย ต่อการรับรู้ถึงประชาคมเศรษฐกิจอาเซียน และปัจจัยภายนอก เพื่อนำไปสู่การตัดสินใจที่จะพัฒนาทักษะด้านภาษาต่างประเทศ”

แบบสอบถามฉบับนี้แบ่งออกเป็น 4 ส่วน คือ

ตอนที่1 ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม

ตอนที่2 ลักษณะเฉพาะของบริษัทที่ผู้ตอบแบบสอบถามทำงานอยู่

ตอนที่3 การวัดระดับการรับรู้ของผู้ตอบแบบสอบถามของชุมชนเศรษฐกิจอาเซียน และสิ่งแวดล้อมภายนอกโดยรวม

ตอนที่4 การวัดระดับการรับรู้ของผู้ตอบแบบสอบถามว่าส่งผลต่อการตัดสินใจในการเลือกเรียนภาษาต่างประเทศหรือไม่

ข้อมูลที่ได้จากแบบสอบถามฉบับนี้ผู้วิจัยจะถือเป็นความลับ โดยจะนำไปประมวลผลในภาพรวม ซึ่งจะไม่มีผลกระทบต่อหน่วยงานหรือการปฏิบัติงานของท่านแต่อย่างใด

ขอขอบพระคุณท่านอย่างยิ่งที่ให้ความร่วมมือ

นางสาว ชญา สุทธิพรพลางกูร

นักศึกษาปริญญาโท หลักสูตรบริหารธุรกิจมหาบัณฑิต(นานาชาติ)

คณะบริหารธุรกิจ และการจัดการ สาขาการบริหารธุรกิจระหว่างประเทศ

มหาวิทยาลัยนานาชาติแสตมฟอร์ด กรุงเทพฯ

ตอนที่1 ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม

คำชี้แจง: กรุณาเลือกคำตอบโดยแสดงเครื่องหมาย √ลงในช่อง ( ) ที่มีการระบุรายละเอียดของคำตอบ โดยเลือกคำตอบที่ใกล้เคียงกับความคิดเห็นของท่านมากที่สุด

1.เพศ ( ) ชาย ( ) หญิง

2. อายุ

( ) 21-30 ปี ( ) 41-50 ปี

( ) 31-40 ปี ( ) 51-60 ปี

3. สถานภาพ

( ) โสด ( ) สมรส

( ) หย่าร้าง/แยกกันอยู่

4. การศึกษา

( ) ต่ำกว่าปริญญาตรี

( ) ปริญญาตรี

( ) ปริญญาโท

( ) ปริญญาเอก

5. รายได้ต่อเดือน

( ) ต่ำกว่า 15,000 บาท

( ) 15,001 – 25,000 บาท

( ) 25,001 – 35,000 บาท

( ) 35,001 – 45,000 บาท

( ) มากกว่า 45,001 บาท

6. ประสบการณ์ทำงาน

( ) น้อยกว่า 5 ปี

( ) 6 – 10 ปี

( ) 11 – 15 ปี

( ) 16 – 20 ปี

( ) 21 – 25 ปี

( ) มากกว่า 25 ปี

7. ท่านเป็นวิศวกรสาขาอะไร

( ) วิศวกรเครื่องกล

( ) วิศวกรโยธา

( ) วิศวกรไฟฟ้า

( ) วิศวกรอุตสาหการ

( ) วิศวกรเคมี

( ) วิศวกรสิ่งแวดล้อม

( ) ด้านอื่น โปรดระบุ.....

ตอนที่2 ลักษณะเฉพาะของบริษัทที่ท่านทำงานอยู่

คำชี้แจง: กรุณาเลือกคำตอบโดยแสดงเครื่องหมาย √ลงในช่อง ( ) ที่มีการระบุรายละเอียดของคำตอบ โดยเลือกคำตอบที่ใกล้เคียงกับความคิดเห็นของท่านมากที่สุด

8. ขนาดของบริษัทที่ท่านทำงานอยู่

( ) บริษัทขนาดเล็ก (มีจำนวนวิศวกรน้อยกว่า 50 คน)

( ) บริษัทขนาดกลาง (มีจำนวนวิศวกร 51-100 คน)

( ) บริษัทขนาดใหญ่ (มีจำนวนวิศวกรมากกว่า 101 คน)

9. ประเภทอุตสาหกรรมของบริษัทที่ท่านทำงานอยู่

( ) ปุ๋ย หรือ สี หรือ เคมีภัณฑ์ ( ) โลหะ/เหล็ก

( ) เสื้อผ้า/สิ่งทอ/หนัง ( ) ยานยนต์

( ) ยาง/พลาสติก/หนังเทียม ( ) อาหาร/กระดาษ/สิ่งพิมพ์

( ) ไฟฟ้า/อุปกรณ์ทางวิทยาศาสตร์ ( ) อื่น ๆ โปรดระบุ.....

10. บริษัทมีการจัดอบรมพนักงานเกี่ยวกับชุมชนเศรษฐกิจอาเซียน (AEC)

( ) มี

( ) ไม่มี

11. บริษัทมีการจัดการประชุม หรือคอร์สอบรมพนักงาน หรือ เดินทางไปทำงานยังหนึ่งในประเทศอาเซียน อาทิ เช่นประเทศบรูไน, อินโดนีเซีย, ฟิลิปปินส์, มาเลเซีย, สิงค์โปร์, ลาว, พม่า, กัมพูชา, หรือเวียดนาม

( ) มี

( ) ไม่มี

12. บริษัทมีสาขา หรือโรงงานผลิต ตั้งอยู่ในหนึ่งในประเทศอาเซียน (ประเทศบรูไน, อินโดนีเซีย, ฟิลิปปินส์, มาเลเซีย, สิงค์โปร์, ลาว, พม่า, กัมพูชา, หรือเวียดนาม)

( ) มี

( ) ไม่มี

13. บริษัทมีแผนขยายกิจการไปยังหนึ่งในประเทศอาเซียน (ประเทศบรูไน, อินโดนีเซีย, ฟิลิปปินส์, มาเลเซีย, สิงค์โปร์, ลาว, พม่า, กัมพูชา, หรือเวียดนาม)

( ) มี

( ) ไม่มี

14. บริษัทมีการเตรียมกลยุทธ์ทางการบริหารงานต้อนรับการเกิดขึ้นของชุมชนเศรษฐกิจอาเซียน

( ) มี

( ) ไม่มี

15. บริษัทมีการเตรียมความพร้อมอย่างดีสำหรับการแข่งขันในเชิงธุรกิจที่เพิ่มมาขึ้นหลังจากการเปิดชุมชนเศรษฐกิจอาเซียน

( ) มี

( ) ไม่มี

ตอนที่3 การวัดระดับการรับรู้ของผู้ตอบแบบสอบถามของชุมชนเศรษฐกิจอาเซียน และสิ่งแวดล้อมภายนอกโดยรวม

คำชี้แจง: แบบสอบถามในตอนที่ 3 นี้ จะมีหัวข้อหลักอยู่ 6 หัวข้อด้วยกัน จุดประสงค์เพื่อประเมินระดับการรับรู้ของวิศวกรต่อปัจจัยภายนอกที่มีผลต่อการรับรู้เรื่องชุมชนเศรษฐกิจอาเซียน (AEC)

กรุณาเลือกระดับคะแนนที่ใกล้เคียงกับระดับการรับรู้ของคุณมากที่สุด โดยใส่เครื่องหมาย √ในช่องคะแนนดังแสดงเกณฑ์กำหนดคะแนนตามตารางด้านล่างนี้

ระดับการรับรู้ด้านชุมชนเศรษฐกิจอาเซียน (AEC)	น้อยที่สุด	น้อย	ปานกลาง	มาก	มากที่สุด
คะแนน	1	2	3	4	5

ตอนที่ 3.1 ช่องทางในการรับข่าวสารเกี่ยวกับชุมชนเศรษฐกิจอาเซียน (AEC)	ระดับความคิดเห็น				
	1	2	3	4	5
16. ท่านรับข้อมูลข่าวสารเรื่องชุมชนเศรษฐกิจอาเซียน (AEC) ผ่านรายการทีวี หรือเคเบิ้ลท้องถิ่น	1	2	3	4	5
17. ท่านรับข้อมูลข่าวสารเรื่องชุมชนเศรษฐกิจอาเซียน (AEC) ผ่านสื่อสิ่งพิมพ์ต่าง ๆ เช่น หนังสือพิมพ์, นิตยสาร หรือวารสารต่าง ๆ	1	2	3	4	5
18. ท่านรับข้อมูลข่าวสารเรื่องชุมชนเศรษฐกิจอาเซียน (AEC) ผ่านเพื่อน หรือเพื่อนร่วมงาน หรือหัวหน้างาน	1	2	3	4	5
19. ท่านรับข้อมูลข่าวสารเรื่องชุมชนเศรษฐกิจอาเซียน (AEC) ผ่านอินเตอร์เน็ต หรือทางเฟซบุ๊ค หรือแอฟพลิเคชั่นอื่นๆ	1	2	3	4	5
20. ท่านรับข้อมูลข่าวสารเรื่องชุมชนเศรษฐกิจอาเซียน (AEC) ผ่านแผ่นป้ายโฆษณาต่าง ๆ	1	2	3	4	5
21. ท่านรับข้อมูลข่าวสารเรื่องชุมชนเศรษฐกิจอาเซียน (AEC) ผ่านรายการวิทยุ	1	2	3	4	5

ตอนที่ 3.2 ประเมินระดับการรับรู้เรื่องชุมชนเศรษฐกิจอาเซียนผ่านนโยบายของรัฐบาล	**ระดับความคิดเห็น**				
	1	**2**	**3**	**4**	**5**
22. ท่านเห็น และรับรู้ถึงกิจกรรมโปรโมตข่าวสารเกี่ยวกับชุมชนเศรษฐกิจอาเซียน (AEC) ของรัฐบาลไทย	1	2	3	4	5
23. ท่านคิดว่ารัฐบาลไทยมีการเตรียมตัวที่ดีเพื่อรับมือกับการเริ่มต้นของชุมชนเศรษฐกิจอาเซียน (AEC) ในปี 2558 นี้	1	2	3	4	5
24. ท่านเห็นว่ารัฐบาลมีแผนในการพัฒนาการค้าขายของคนไทย เพื่อเตรียมความพร้อมสู่การก้าวเป็นหนึ่งในชุมชนเศรษฐกิจอาเซียน (AEC)	1	2	3	4	5
25. ท่านคิดว่ารัฐบาลไทยสามารถนำประเทศไทยไปสู่การตั้งต้นชุมชนเศรษฐกิจอาเซียนได้อย่างทัดเทียมประเทศอื่น ๆ ในอาเซียน	1	2	3	4	5

ตอนที่ 3.3 ประเมินระดับการรับรู้เรื่องชุมชนเศรษฐกิจอาเซียน (AEC) ด้านวัฒนธรรมที่หลากหลาย	**ระดับความคิดเห็น**				
	1	**2**	**3**	**4**	**5**
26. ท่านเปิดใจกับการรับวัฒนธรรมที่หลากหลาย	1	2	3	4	5
27. ท่านรู้ถึงความหลากหลายทางวัฒนธรรมของประเทศอื่นในอาเซียน และพร้อมที่จะเรียนรู้	1	2	3	4	5
28. ท่านเต็มใจที่จะแลกเปลี่ยนวัฒนธรรมไทยกับผู้อื่นที่มาจากประเทศอื่นในอาเซียน	1	2	3	4	5
29. ท่านเต็มใจที่จะแลกเปลี่ยนวัฒนธรรมเพื่อความเป็นหนึ่งในชุมชนเศรษฐกิจอาเซียน	1	2	3	4	5
30. ท่านภูมิใจในวัฒนธรรมไทย และพร้อมที่จะเผยแพร่วัฒนธรรมไทยให้แก่ชาติอื่น	1	2	3	4	5

ตอนที่ 3.4 ประเมินระดับการรับรู้เรื่องชุมชนเศรษฐกิจอาเซียน (AEC) ด้านเศรษฐกิจ	**ระดับความคิดเห็น**				
	1	**2**	**3**	**4**	**5**
31. ท่านคิดว่าชุมชนเศรษฐกิจอาเซียน (AEC) มีผลกระทบต่อ การเงินของท่านในเชิงบวก	1	2	3	4	5
32. ท่านคิดว่าชุมชนเศรษฐกิจอาเซียน (AEC) จะทำให้รายได้ท่านเพิ่มมากขึ้น	1	2	3	4	5
33. ท่านคิดว่าชุมชนเศรษฐกิจอาเซียน (AEC) จะเพิ่มการแข่งขันในเชิงธุรกิจ	1	2	3	4	5
34. ท่านคิดว่าชุมชนเศรษฐกิจอาเซียน (AEC) จะเพิ่มโอกาสในเชิงธุรกิจ	1	2	3	4	5

ตอนที่ 3.5 ประเมินระดับการรับรู้เรื่องชุมชนเศรษฐกิจอาเซียน (AEC) ด้านเทคโนโลยี	**ระดับความคิดเห็น**				
	1	**2**	**3**	**4**	**5**
35. ท่านคิดว่าเทคโนโลยีในปัจจุบันมีผลกระทบต่ออาชีพของท่าน	1	2	3	4	5
36. ท่านคิดว่าชุมชนเศรษฐกิจอาเซียน (AEC) มีผลทำให้ท่านเพิ่มความสามารถทางด้านเทคโนโลยี	1	2	3	4	5
37. ท่านคิดว่าชุมชนเศรษฐกิจอาเซียน (AEC) มีผลกระตุ้นทำให้ท่านอยากเรียนรู้เทคโนโลยีใหม่ ๆ	1	2	3	4	5

ตอนที่ 3.6 ประเมินระดับการรับรู้เรื่องชุมชนเศรษฐกิจอาเซียน (AEC) ด้านข้อตกลงยอมรับร่วม (MRA) ในคุณสมบัติของวิศวกรอาเซียน	**ระดับความคิดเห็น**				
	1	**2**	**3**	**4**	**5**
38. ท่านคิดว่าการเคลื่อนย้ายแรงงานที่มีทักษะอย่างเสรีตามข้อตกลงยอมรับร่วมของวิศวกรอาเซียนมีผลกระทบในเชิงบวกต่ออาชีพของท่าน	1	2	3	4	5
39. ท่านคิดว่าการเคลื่อนย้ายแรงงานที่มีทักษะอย่างเสรีไม่มีผลกระทบต่อตัวท่านเลย	1	2	3	4	5
40. ท่านคิดว่าการเคลื่อนย้ายแรงงานที่มีทักษะอย่างเสรี สามารถเพิ่มโอกาสทางอาชีพของท่านในการทำงานยังประเทศอื่น ๆ ในอาเซียน	1	2	3	4	5
41. ท่านคิดว่าการเคลื่อนย้ายแรงงานที่มีทักษะอย่างเสรี มีความเสี่ยงต่อความมั่นคงทางอาชีพของท่าน เพราะจะมีวิศวกรคู่แข่งทั่วอาเซียน	1	2	3	4	5
42. ท่านรู้รายละเอียดเกี่ยวกับข้อตกลงร่วม (MRA) ในคุณสมบัติของวิศวกรอาเซียน	1	2	3	4	5

ตอนที่4 การวัดระดับการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศ ของวิศวกร ที่มีอิทธิพลจากการรับรู้เรื่องชุมชนเศรษฐกิจอาเซียน (AEC) และปัจจัยภายนอก

คำชี้แจง: แบบสอบถามในตอนที่ 4 นี้ จะมีหัวข้อหลักอยู่ 6 หัวข้อใหญ่ด้วยกัน จุดประสงค์เพื่อประเมินระดับการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศ ของวิศวกร ที่มีอิทธิพลจากการรับรู้เรื่องชุมชนเศรษฐกิจอาเซียน (AEC) และปัจจัยภายนอก

กรุณาเลือกระดับคะแนนที่ใกล้เคียงกับระดับการตัดสินใจของคุณมากที่สุด โดยใส่เครื่องหมาย √ในช่องคะแนนดังแสดงเกณฑ์กำหนดคะแนนตามตารางด้านล่างนี้

ระดับการตัดสินใจในการพัฒนาทักษะด้านภาษาต่างประเทศ	ไม่เห็นด้วยอย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วยอย่างยิ่ง
คะแนน	1	2	3	4	5

ตอนที่4: การวัดระดับการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศของวิศวกร ที่มีอิทธิพลจากการรับรู้เรื่องชุมชนเศรษฐกิจอาเซียน (AEC) และปัจจัยภายนอก	ระดับการตัดสินใจ				
	1	**2**	**3**	**4**	**5**
43. สื่อโทรทัศน์ที่มีรายการเกี่ยวกับประชาคมเศรษฐกิจอาเซียน มีอิทธิพลต่อการตัดสินใจในการพัฒนาทักษะด้านภาษาต่างประเทศของท่าน	1	2	3	4	5
44. สื่อสิ่งพิมพ์ที่ท่านได้อ่านข้อมูลเกี่ยวกับประชาคมเศรษฐกิจอาเซียน มีอิทธิพลต่อการตัดสินใจในการพัฒนาทักษะด้านภาษาต่างประเทศของท่าน	1	2	3	4	5
45. หัวหน้างาน หรือเพื่อนร่วมงานของท่านได้มีการพูดคุยถึงเรื่องชุมชนเศรษฐกิจอาเซียน ซึ่งมีอิทธิพลต่อการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศของท่าน	1	2	3	4	5
46.เวปไซด์ หรือโซเชี่ยลมีเดียร์ ที่เสนอข่าวเกี่ยวกับประชาคมเศรษฐกิจอาเซียน มีอิทธิพลต่อการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศของท่าน	1	2	3	4	5
47. ป้ายโฆษณาต่าง ๆ ที่มีเนื้อหาเกี่ยวกับประชาคมเศรษฐกิจอาเซียน ที่ท่านเห็นนั้น มีอิทธิพลต่อการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศของท่าน	1	2	3	4	5

ตอนที่4: การวัดระดับการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศของวิศวกร ที่มีอิทธิพลจากการรับรู้เรื่องชุมชนเศรษฐกิจอาเซียน (AEC) และปัจจัยภายนอก	**ระดับการตัดสินใจ**				
	1	**2**	**3**	**4**	**5**
48.รายการวิทยุที่มีเนื้อหาเกี่ยวกับประชาคมเศรษฐกิจอาเซียน มีอิทธิพลต่อการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศของท่าน	1	2	3	4	5
49.นโยบายของรัฐบาลที่สนับสนุนเกี่ยวกับประชาคมเศรษฐกิจอาเซียน มีอิทธิพลต่อการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศของท่าน	1	2	3	4	5
50.ท่านตระหนักถึงวัฒนธรรมอันหลากหลายเนื่องจากการเข้าสู่ชุมชนเศรษฐกิจอาเซียน ซึ่งข้อมูลนั้นมีอิทธิพลต่อการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศของท่าน	1	2	3	4	5
51. ท่านตระหนักถึงการพัฒนาเศรษฐกิจของประเทศไทย หลังจากการมาซึ่งประชาคมเศรษฐกิจอาเซียน และสิ่งเหล่านั้นมีอิทธิพลต่อการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศของท่าน	1	2	3	4	5
52. ท่านตระหนักถึงเทคโนโลยีที่จะกว้างขวางขึ้น หลังจากประชาคมเศรษฐกิจอาเซียนเกิดขึ้น และสิ่งนั้นมีอิทธิพลต่อการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศของท่าน	1	2	3	4	5
53. ท่านรับรู้ถึงข้อตกลงยอมรับร่วม (MRA) ในคุณสมบัติของวิศวกรอาเซียน และสิ่งนั้นมีอิทธิพลต่อการตัดสินใจพัฒนาทักษะด้านภาษาต่างประเทศของท่าน	1	2	3	4	5

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APPENDIX C

Index of Congress (IOC)

Part1 : Demographic data	Specialist			IOC	Interpretation
	1	2	3		
Gender					
1. Male	+1	+1	+1	1	Acceptable
2. Female					
Age					
1. 21 – 30 years old					
2. 31 – 40 years old	+1	+1	+1	1	Acceptable
3. 41 – 50 years old					
4. 51 – 60 years old					
Marital Status					
1. Single	+1	+1	+1	1	Acceptable
2. Married					
3. Divorced / Separated					
Education					
1. Diploma/higher vocational education					
2. Bachelor's degree	0	+1	+1	0.67	Acceptable
3. Master's degree					
4. Doctorate degree					
Monthly Income					
1. Less than 15,000 THB					
2. 15,001 – 25,000 THB	+1	+1	+1	1	Acceptable
3. 25,001 – 35,000 THB					
4. 35,001 – 45,000 THB					
5. More than 45,001 THB					
Years of work experience					
1. less than 5 years					
2. 6 – 10 years					
3. 11 – 15 years	+1	+1	+1	1	Acceptable
4. 16 – 20 years					
5. 21 – 25 years					
6. More than 25 years					

Part1 : Demographic data	Specialist			IOC	Interpretation
	1	2	3		
Engineering Category					
1. Mechanical Engineer 2. Civil Engineer 3. Electrical Engineer 4. Industrial Engineer 5. Chemical Engineer 6. Environmental Engineer 7. Others (please, identify)……	+1	+1	+1	1	Acceptable
Part 2: Company characteristic					
Size of your company					
1. Small (the number of engineers less than 50) 2. Medium (the number of engineers 51-100) 3. Large (the number of engineers more than 101)	+1	+1	+1	1	Acceptable
Industry category					
1. Fertilizer/paint/chemical product 2. Metal/Steel 3. Textiles/leather/clothes 4. Rubber/Plastic/imitation leather 5. Electronics/Scientific equipment 6. Automobile 7. Food/Paper/Printing 8. Others	+1	+1	+1	1	Acceptable
Company has the AEC training course for engineers 1. Yes 2. No	+1	+1	+1	1	Acceptable
Company have meeting or training course or work trip for engineers located at AEC member countries 1. Yes 2. No	+1	0	+1	0.67	Acceptable

Part2 : Company characteristic	Specialist			IOC	Interpretation
	1	2	3		
Company have another branches or manufacturing in AEC member countries 1. Yes 2. No	+1	+1	+1	1	Acceptable
Company plans to expand into the AEC member countries 1. Yes 2. No	+1	+1	+1	1	Acceptable
Company has new business strategies for AEC 1. Yes 2. No	+1	+1	+1	1	Acceptable
Company is well prepared for more challenging on AEC 1. Yes 2. No	+1	+1	+1	1	Acceptable
Part 3: The perception of engineers on AEC and its environment					
Part 3.1 - AEC receiving channel					
You received the information about AEC through Television Media such as Free TV or local cable TV. 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
You received the information about AEC through Printing Media such as Newspaper/Magazine/journal 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
You received the information about AEC from friends or colleagues or your supervisor. 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	0	+1	0.67	Acceptable

Part3 : The perception of engineers on AEC and its environment	**Specialist**			**IOC**	**Interpretation**
	1	**2**	**3**		
You received the information about AEC through internet or social media such as facebook, twitter 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
You received the information about AEC through Billboard or signboard 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	0	+1	0.67	Acceptable
You received the information about AEC through Radio 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
Part 3.2 - Measuring the perception in term of Government policy					
The government policy helps you to receive the information about AEC 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	0	0	+1	0.33	Unacceptable
The government has advertising activity about AEC 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
Thai government is well prepared for AEC 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
Thai government have plans for improving Thai's commerce to be ready on AEC 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
Thai government are strongly leading Thailand towards the AEC 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable

Part3 : The perception of engineers on AEC and its environment	Specialist 1	2	3	IOC	Interpretation
Part 3.3 Measuring the perception in term of Cultural diversity					
You are open for cultural differentiation 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	0	+1	0.67	Acceptable
You know the different between cultural across ASEAN and also learn from its 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
You are willing to exchange Thai culture with others ASEAN members 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	0	+1	0.67	Acceptable
You are willing to exchange cultural towards one community. 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
You are proud on Thai culture and willing to disseminate Thai culture 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	0	+1	0.67	Acceptable
Part 3.4 Measuring the perception in term of Economic growth					
The AEC had effected on your financial in the positive ways. 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
The AEC increasing your income 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	0	+1	+1	0.67	Acceptable

Part3 : The perception of engineers on AEC and its environment	Specialist			IOC	Interpretation
	1	2	3		
The AEC had no effect on your financial 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	-1	0	+1	0	Unacceptable
The AEC gain more challenging in term of business 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	0	0.67	Acceptable
The AEC gain more opportunity in term of business 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
Part 3.5 Measuring the perception in term of widely technological on the AEC					
Technology had effected with your life 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	-1	0	+1	0	Unacceptable
Technology had effected with your career. 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	0	+1	+1	0.67	Acceptable
The AEC policy had improved the technological segment. 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	-1	0	+1	0	Unacceptable
The AEC had made you to increase your technological potential. 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	0	+1	+1	0.67	Acceptable
The AEC had made you to be more enthusiastic to learning new technology 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	0	+1	0.67	Acceptable

Part 3.6 Measuring the perception in term of ASEAN Mutual Recognition Arrangement on Engineering Services					
The free flow of skilled labour on AEC had a positive effected with your career 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	0	+1	+1	0.67	Acceptable
The free flow of skilled labour on AEC had no effected on you 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
The free flow of skilled labour increasing the opportunities for you to work in another ASEAN member countries. 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
The free flow of skilled labour are risk with your career and have more engineer competitors from the ASEAN member countries. 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
You know the details of MRAs on engineering services 1 – Lowest, 2 – Low , 3 – Average 4 – High, 5 – Highest	+1	+1	+1	1	Acceptable
Part 4: Perception of Engineer on AEC and its environment has influence on decision making by engineers to develop their foreign language skills : Measuring the level of decision making					
TV media about AEC have influence on your decision making to develop foreign language skills 1 – Strongly disagree , 2 – Disagree , 3 – Neither disagree nor agree, 4 – Agree, 5 – Strongly agree	+1	+1	+1	1	Acceptable

Part 4: Perception of Engineer on AEC and its environment has influence on decision making by engineers to develop their foreign language skills : Measuring the level of decision making	**Specialist**			**IOC**	**Interpretation**
	1	**2**	**3**		
Printing media about AEC have influence on your decision making to develop foreign language skills 1 – Strongly disagree , 2 – Disagree , 3 – Neither disagree nor agree, 4 – Agree, 5 – Strongly agree	+1	+1	+1	1	Acceptable
Verbal communication about AEC from your friends, colleagues, or supervisor have influence on your decision making to develop foreign language skills 1 – Strongly disagree , 2 – Disagree , 3 – Neither disagree nor agree, 4 – Agree, 5 – Strongly agree	+1	+1	+1	1	Acceptable
Websites or social media about AEC have influence on my decision making to develop foreign language skills 1 – Strongly disagree , 2 – Disagree , 3 – Neither disagree nor agree, 4 – Agree, 5 – Strongly agree	+1	+1	+1	1	Acceptable
Billboards or Signboard about AEC have influence on my decision making to develop foreign language skills 1 – Strongly disagree , 2 – Disagree , 3 – Neither disagree nor agree, 4 – Agree, 5 – Strongly agree	+1	+1	+1	1	Acceptable
Radio program about AEC have influence on your decision making to develop foreign language skills 1 – Strongly disagree , 2 – Disagree , 3 – Neither disagree nor agree, 4 – Agree, 5 – Strongly agree	+1	+1	+1	1	Acceptable
The government policy about AEC have influence on your decision making to develop foreign language skills 1 – Strongly disagree , 2 – Disagree , 3 – Neither disagree nor agree, 4 – Agree, 5 – Strongly agree	+1	+1	+1	1	Acceptable

Part 4: Perception of Engineer on AEC and its environment has influence on decision making by engineers to develop their foreign language skills : Measuring the level of decision making	**Specialist**			**IOC**	**Interpretation**
	1	**2**	**3**		
Cultural diversity in AEC have influence on your decision making to develop foreign language skills 1 – Strongly disagree , 2 – Disagree , 3 – Neither disagree nor agree, 4 – Agree, 5 – Strongly agree	+1	+1	+1	1	Acceptable
Economic growth from AEC have influence on your decision making to develop foreign language skills 1 – Strongly disagree , 2 – Disagree , 3 – Neither disagree nor agree, 4 – Agree, 5 – Strongly agree	+1	+1	+1	1	Acceptable
The widely technological from AEC have influence on your decision making to develop foreign language skills 1 – Strongly disagree , 2 – Disagree , 3 – Neither disagree nor agree, 4 – Agree, 5 – Strongly agree	+1	+1	+1	1	Acceptable
The ASEAN Mutual recognition arrangement in Engineering services have influence on your decision making to develop foreign language skills 1 – Strongly disagree , 2 – Disagree , 3 – Neither disagree nor agree, 4 – Agree, 5 – Strongly agree	+1	+1	+1	1	Acceptable
Total				0.94	Acceptable

LIST OF EXPERT

Name	Position
1. Dr. Apitep Saekow	Dean of Graduate School at Stamford International University
2. Mr.Charttanong Angkaprasertkul	Process Engineer at Mattel Bangkok company
3. Ms. Chonnikarn Patnapanpong	Researcher at Perfect companion group

APPENDIX D
LETTER OF ALLOWANCE

วันที่ 17 ธันวาคม 2557

เรื่อง ขอความอนุเคราะห์ข้อมูลด้านสถิติเพื่อทำวิจัย

เรียน ผู้อำนวยการสำนักงานนิคมอุตสาหกรรมบางปู

เนื่องด้วยมหาวิทยาลัยนานาชาติแสตมฟอร์ด เป็นสถาบันการศึกษาระดับอุดมศึกษาชั้นนำ เปิดสอนวิทยาเขตกรุงเทพมหานคร และวิทยาเขตหัวหิน ทั้งหลักสูตรภาษาอังกฤษ และหลักสูตรภาษาไทย ตั้งแต่ปี 2539 เป็นต้นมา ในภาคการศึกษานี้มีนักศึกษาหลักสูตรบริหารธุรกิจมหาบัณฑิต ได้ศึกษาค้นคว้าข้อมูลประกอบการทำวิทยานิพนธ์ เรื่อง "**A study on the relationship between company characteristic**, demography **of engineers and their perception on AEC and its environment influencing the decision to develop their foreign language skills, in Bangpoo industrial area, Samuthprokarn , Thailand**" เพื่อเป็นส่วนหนึ่งของการศึกษาตามหลักสูตรบริหารธุรกิจมหาบัณฑิต มหาวิทยาลัยฯเห็นสมควรเป็นอย่างยิ่งว่าท่านและองค์กรของท่านมีความเหมาะสมและสำคัญที่เป็นประโยชน์กับการทำวิทยานิพนธ์ของนักศึกษา จึงใคร่ของความอนุเคราะห์จากท่านช่วยอำนวยความสะดวก และให้ความร่วมมือ กับ นางสาวชญา สุทธิพรพลางกูร เก็บข้อมูลประกอบการทำวิทยานิพนธ์ดังกล่าวข้างต้น โดยมีวัตถุประสงค์เพื่อขอข้อมูลในเชิงสถิติ "**จำนวน และรายชื่อโรงงานในนิคมอุตสาหกรรมบางปู โดยแบ่ง ตามโรงงานจำพวก 1 , 2 และ 3**" ทางมหาวิทยาลัยหวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์จาก**องค์กรของ**ท่านภายในโอกาสแรกที่สามารถกระทำได้ โดยส่งข้อมูลดังกล่าวข้างต้นที่อีเมลล์ : luknum_4@hotmail.com

จึงเรียนมาเพื่อโปรดพิจารณาและขอขอบพระคุณเป็นอย่างสูงล่วงหน้ามา ณ โอกาสนี้

ขอแสดงความนับถือ

ผู้อนุมัติ

(นางสาวชญา สุทธิพรพลางกูร)

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เรื่อง: ขอความอนุเคราะห์ในการส่งนักศึกษาเก็บข้อมูลงานวิจัย

เรียน: ผู้จัดการฝ่ายบุคคล

สิ่งที่ส่งมาด้วย: แบบสอบถามเพื่อการวิจัย จำนวน 1 ชุด

ด้วย **นางสาวชญา สุทธิพรพลางกูร** นักศึกษาระดับปริญญาโท รหัสนักศึกษา **013231017** หลักสูตรบริหารธุรกิจมหาบัณฑิต มหาวิทยาลัยนานาชาติแสตมฟอร์ด วิทยาเขตกรุงเทพ ได้ศึกษาวิจัยหัวข้อ "**ศึกษาความสัมพันธ์ระหว่างลักษณะเฉพาะของบริษัท กับ หลักประชากรศาสตร์ ของวิศวกรในเขตอุตสาหกรรมบางปู จังหวัดสมุทรปราการ ประเทศไทย ต่อการตระหนักถึงประชาคมเศรษฐกิจอาเซียน เพื่อที่จะพัฒนาทักษะด้านภาษาต่างประเทศ**" โดยมี **ดร.ดรณ์ ผจงลักษณ์** เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์

เพื่อให้การดำเนินการวิจัยสำเร็จลุล่วงไปด้วยดี จึงใคร่ขอความอนุเคราะห์จากผู้ที่เกี่ยวข้องให้นักศึกษา เข้าทำการเก็บรวบรวมข้อมูลที่ THAI CONTAINERS GROUP CO.,LTD. 620 ม.4 ซอย7A ถ.สุขุมวิท ต.แพรกษา อ.เมือง สมุทรปราการ จ.สมุทรปราการ ในระหว่างวันที่ 24 เมษายน 2558 – 15 พฤษภาคม 2558 ทั้งนี้ผู้วิจัยจะเป็นผู้ประสานในรายละเอียดต่อไป

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์ในการเก็บข้อมูลวิจัยด้วย จักเป็นพระคุณยิ่ง และขอขอบคุณมา ณ โอกาสนี้

ขอแสดงความนับถือ

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