

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

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Keywords:

AEC
Perception
Decision Making
MRAs
Engineers

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, with work experience of less than five years, 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 (Mutual Recognition Arrangements) on engineering services has some influence on decision making by engineers to develop their foreign language skills.

INTRODUCTION

Statement of the Problems

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 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).

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. 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 (EF English Proficiency Index, 2014).

From the Table 1, 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 (Anynoums, 2012).

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TABLE 1
The Ranking of English Language Skills

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

Source: EF English Proficiency index, 2014

Sakkarin Niyomsilpa (Fernquest, 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.

TABLE 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. Phillipines	38
7. Brunei Darussalam	2
8. Cambodia	1
9. Laos PDR	0
10. Thailand	0

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

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).

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.

Objectives

- 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.

Significance of the Study

All ten of the ASEAN member countries have agreed to use English as the official language for communication, as 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” (Le Loung Mihn, 2013).

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

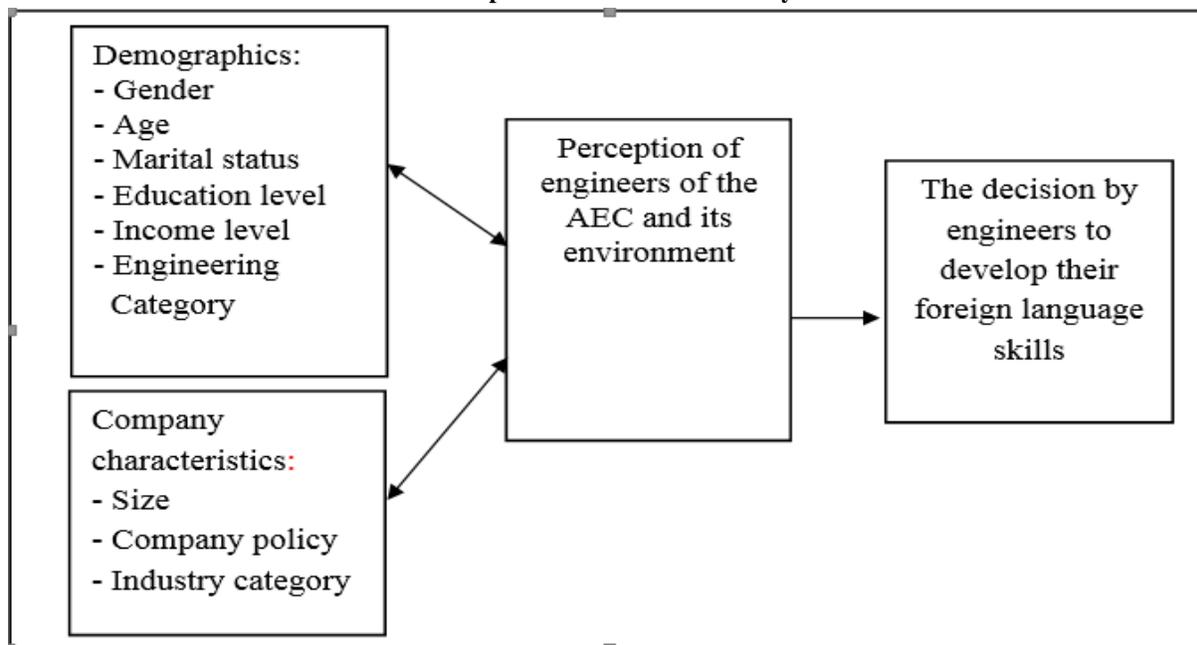
will aim towards finding a relationship between the demography of engineers, company characteristics and the perception of engineers in the Bang poo industrial area of the AEC and its environment that influences with their decision making to develop learning foreign language skills. The results from this research can be adapted and be useful in terms of human resource development or could be used in terms of analyzing organization behavior.

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.

FIGURE 1
Conceptual Framework of a Study



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

LITERATURE REVIEW

Demography Theory

Thomson (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. 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, interpretation 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. 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.

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 (Secretariat, 2014).

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 (Anonymous, 2013, 2012). Gain more investment and trading

activities in other ASEAN members due to easier and free movement (Buranasomphop, 2014).

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, 2014). 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, 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 (Rattanaquonkangwa, 2012);

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. 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.

Perception Theory

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, 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.

Factors Influencing Perception

Patchanee Vorakawin (Muangsilapatsat & Watcharasriroj, 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.

Decision Theory

Hansson (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.

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 satisfactory 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 factors 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 influential with the choice to make with the individual person's perception too.

Second Language Acquisition

Ellis (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.

Human Resource Development

Heathfield (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.

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 to change human resources to take on a different role;
 1. Change agent
 2. Create a learning environment that leads to a learning organization.

Organizational Behavior

Lombardo (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.

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, 2011).

The Advantages from Studying Organization Behavior (Malhotra, 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.

External and Internal Environment

The internal environment is the event or situation that has a direct impact on the organization or a company (Sahi, 2011). 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 (Anonymous, 2010).

The external environment includes all of those factors outside the organization that have an impact on the ability of the organization (Root III & Media, 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. 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 divided 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.

Relationship between Variables

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, 2011).

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. If “r” has a negative

value (lower than 0) it means that the relationship between the variables is negative (Wickens, 2013).

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.

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, 2006)

General Information of the Bang Poo Industrial Estate

The Bang Poo Industrial Estate was established in 1977 (Bang Poo Industrial Estate, 2013) and developed by the Thailand Industrial Real Estate Development Company Limited. It is located in the Samuthprakarn province of Thailand. The total area is around 1,806 acres. The number of factories in operation is 353 in total. 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

Previous Studies

The first research 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 Joungrakul (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.

Pudthum and Sutamuang (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.

Research Hypotheses

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

RESEARCH METHODOLOGY

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. 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.

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, as follows:

TABLE 3

Industry Category by Complexity

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

Source: Adapted from Bang Poo industrial estate (2013)

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 4

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 (2013)

TABLE 5

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 (2013)

TABLE 6
Quantity of Factories in the Most Complexity Industries

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

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 7
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 (2013)

TABLE 8
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 (2013)

TABLE 9
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 (2013)

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.

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 (Israel, 1992).

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

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.

Sampling Method

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). 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. 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 10, as follows:

TABLE 10
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 (2013)

RESEARCH METHODOLOGY

This research used quantitative approaches to research. The scholar Eliyahu (2014) argued that the quantitative methodology tends to estimate a phenomenon from a large group of numbers, therefore the data collected by questionnaires.

The questionnaire which was used in this research was divided into four parts,

Part 1: Demographic data.

Part 2: Company characteristic,

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

Part 4: The perception of engineers of the AEC and its environment influencing the decision making to develop their foreign languages skills.

Questionnaire part 1 and 2 were measured by using a nominal scale and ordinal scale. Questionnaire part 3 and 4 were measured by using the five-level Likert scale. Before the questionnaire could be used, it needs to be pre-tested of its Validity and Reliability first.

Pretest of Research Instrument

Content Validity

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 (Miller, 2013).

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.

The questionnaire in this research had four parts, 33 items and the total IOC was equal to 0.95 which meant that it had reached an acceptable level.

Reliability Test

In this research Cronbach's alpha was used to analyze the internal consistency of the questionnaire. The pre-test of the questionnaire

was sent to 30 respondents by email. The results of Cronbach's alpha are shown in Table 11 below:

TABLE 11
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 11, 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.

RESULTS

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%).

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. The highest ranking was receiving information through TV programs and internet. 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.

Due to there are many different method and eleven items of hypotheses, the researcher described presents the results in the following Table 12:

TABLE 12
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.	Accepted
H1a : Gender has a significant relationship on the perception of engineers of the AEC and its environment.	H1a ₀
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
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	H3a ₀

DISCUSSION AND CONCLUSION

Discussion in Terms of Demography

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.

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.

In addition to the company size, 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 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.

Discussion in Terms of Perception that Influence Decision Making

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 (Thongtep, 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).

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 center.

LIMITATIONS

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 research 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.

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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