

*The economic perspective of labor's english language
proficiency
in the aec era*

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ABSTRACT

Language acquisition can be considered as an important element for labors to improve their working capabilities, leading to human capital development. Thai labors, facing the more liberalized labor market under AEC, need to adjust themselves to become more productive. An adjustment that is necessary for workers to stay competitive under this globalizing trend is the enhancement of their English proficiency. However, the acquisition of workers' English language skills depends on a number of factors. Therefore, this study aims to investigate the English skills, including vocabulary, grammar, and listening, of vocational students with three different groups of characteristics, namely, the levels of study, the fields of study, and gender. It employs various statistical tests and stepwise regression associated with OLS to estimate the predictive power of independent variables. The study finds a number of significant variables which can explain Thai vocational students' English language proficiency. Interestingly, the efficiency and economic incentive factors present quite strong effects to all skills. Unfortunately, schools where students are studying show the evidence of opposite relations. This could be an indication of academic facilitation and environment. The findings should thus offer insightful information for both private school entrepreneurs and government agencies to provide appropriate measures for workers and prospective workers so that they can compete more efficiently in the labor market.

Key words: English Language Proficiency, Human Capital, Stepwise Regression

I. Introduction

With the increasing role of liberalization in the global economic system, competitiveness has received unavoidable attention. A number of governments have then taken this issue as a national agenda, aiming at handling the impact of the globalization in order to either prevent the loss or achieve the gain from internationalization. This area has consequently drawn the interest of academic researchers, especially on the labor market aspect. This is because of its vulnerability to changes in fundamental structure. Lee (2005), Ernst (2005), Walmsley, Ahmed, and Parsons (2005), Rooth and Saarela, (2007), Kapur and Chakraborty (2008) and Brühlhart, et al (2011), for example, investigate the impact of trade liberalization on employment and explain the relationship between trade liberalization and employment in terms of productivity, wage, job disqualification and so forth. Even though those of previous studies provide inconclusive outcomes on the direction of the relationship, they still find the significant evidence of the impact of liberalization on employment.

Because of the labor market's vulnerability to liberalization, strengthening workers' capability should get them prepared for any positive or negative changes. Based upon the human capital concept, labor with embedded human capital is likely to be more efficient than the one without it, under indifferent working conditions. Higher productivity could lead to higher wage rate for workers (Boyd and Cao, 2009). Besides, human capital works to increase the supply of skilled labor while decreasing that of the unskilled. This could result in the convergence of wages in the labor market, consequently the less inequality of income distribution in the society. The obvious significance of human capital together with the competitive pressure from the freer mobility of skilled labor caused by economic integration, especially, the ASEAN Economic Community or AEC, makes human capital development a central issue in both academic and policy-making circles. Under the forthcoming AEC, to be completed in 2015, workers in 10 countries, including Thailand, could be forced to deal with both the favorable and damaging situations

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associated with the free movement of labor among members. Human capital enhancement depends on a number of factors. One of them is language skill, especially second language proficiency which increasingly plays an important role in working through communication processes and influences labor productivity as argued by Kim (2003). Workers' language capability could facilitate their communication with superiors and colleagues, leading to better coordination in the workplace. On the contrary, the lack of English skill could force individuals to work in positions below their productivities, according to Gonzalez (2010) and Bloemen (2012). Since English language acquisition is an integral part of human capital building up, Thai workers whose proficiency is unfortunately at a low level would thus face the competitive challenge from other ASEAN's labors.

As liberalization is apparent, in order to either reap its benefits or survive the strong competition among themselves and from ASEAN labors, Thai skilled workers need to improve their English skills so as to catch up with the globalization and increase their job performance. To address the English capability of Thai labors from an economic viewpoint, this study aims to investigate the determining factor of the English skills, including vocabulary, grammar, and listening, of vocational students with three different groups of characteristics, namely, the levels of study, the fields of study, and gender. Based on this objective, the focus is on the case of vocational students because they can be considered as a major source of potential skilled workers for the Thai labor market. However, in most vocational college curricula, English language has been compulsorily included only at a minimum level, comparing with normal college curricula. This makes English language proficiency a key shortcoming of these vocational students. To achieve the above objective, various statistical analyses are employed and OLS with stepwise regression is applied to explore the explanatory power of potential factors.

This study is structured as follows. Section II provides a brief review of related literature on the economics of language. Section III explains data description and variables as well as methodology used for the statistical analysis. Section IV and V presents and discusses statistic and empirical findings, respectively. And the last section provides the conclusion and recommendation.

II. Related Literature: Theoretical Framework and Empirical Evidence

This study is carried out within the context of the economics of language. Among researches in this field, which has been developed since the late 1970s (Posel and Casale, 2010), works undertaken to date have focused on the case of immigrants. This is due to their apparent greater sensitivity to the acquisition of destination language. In Thailand, once the liberalization under AEC takes effect, Thai labor could as well become more vulnerable to the issue of English language proficiency. It could determine workers' chances of retaining a present job or getting a new job. Language proficiency can be analyzed using the human capital theory. According to this theoretical framework, language skills can be considered as human capital because they can satisfy the three requirements for human capital, i.e. they are productive, costly to produce, and embodied in the person (Chiswick, 2008).

According to the theoretical hypothesis of new growth theory, the investment in human capital as the persistent accumulation of knowledge, either with international efforts (Lucas, 1988) or with learning by doing (Azariadis and Drazen, 1990), promotes the productivity of labor and capital which is one of the most important engines of economic growth. Generally, education can be considered as investment in human capital. This study then assigns the level of English ability, proxied by English test scores, to capture human investment underlining the framework of new growth theory.

The model of language skill acquisition is generally employed to analyze the determinants of English language proficiency of vocational students. This model was first introduced by Chiswick and subsequently developed in a series of studies done by Chiswick and Miller (1995, 1998, 2000, 2002, and 2007) and Chiswick (2008). Based upon human capital theory and those previous investigations, there are four conceptualized groups of variables that affect the level of English language proficiency of workers, consisting of exposure, efficiency, economic incentive, and wealth.

Chiswick and Miller (2000 and 2002) find significantly explanatory power of persons' exposure, e.g. education level, countries' historical background, to language capability of immigrant workers. People with more exposure to English language are likely to be more proficient. Thus, the possibility of broader experiences on new environment would lead non-native speakers to expose to foreign language. As a result, opportunities to hear, speak, read, and study language are important for language learning.

Moreover, efficiency refers to the ability to convert exposure into language learning (Chiswick, 2008). Since some individuals may be more capable in capturing new knowledge, hence they tend to be faster in learning a language than others. For this reason, efficiency maybe an important factor in language acquisition (Burdjia and Swedberg, 2010). Age is usually a good proxy for efficiency in acquiring language skills. Younger people have a

higher ability of learning languages. Therefore, for immigrants, the age at entry crucially determines efficiency (Isphording and Otten, 2011). However, age is not a relevant variable for this study as the sample is vocational students who are in the same range of age. Selected factors related to education are then considered as efficiency variables. For example, those with more schooling are more adept in language because they are more efficient learners (Chiswick, 2008).

Another key conceptual variable is economic incentive factors. They can be identified as the potentially beneficial situation or status of persons that could act as a stimulus for them to improve their English language skill. Chiswick and Miller (2000) explain that in the case of immigrants, economic incentive takes the form of the expected increment in wages from becoming language proficient and the expected future duration of employment. For example, the incentive for a Thai immigrant to acquire English proficiency will be greater, the longer his expected working duration in the US, as this will be associated with greater returns from an investment in language acquisition (Saraithong and Chanchaenchai, 2012). Lastly, the wealth factor is included in this study to examine the supply side of the acquisition of better English proficiency in the case of vocational students. Although English subject is mandatory in vocational curricula, it is provided for just a very basic level to students. This is far from meeting the requirement of the labor market under the intense liberalized competition. Since greater wealth could better facilitate investment in acquiring English skill, it thus increases the possibility of English proficiency enhancement.

III. Data Description and Methodology

This section discusses data, variables, and methodology employed in this study. This is to provide an essential groundwork for clear understanding of various aspects that could influence English language proficiency of vocational students. To address the question of English language acquisition, the stepwise regression model is employed associated with socio-economic and some other personal data as the proxy variables of exposure, efficiency, economic incentive and wealth. Meanwhile, the test of grammar, vocabulary and listening skills is taken by participated students as a measurement of English proficiency. This is to avoid the bias problem from the measurement error of self-assessed questionnaires. The data was collected using a multi-stage random technique with a combination of cluster and purposive samplings. The groups of sample include four vocational schools with different sizes and locations in Bangkok area, covering 3,760 students from their total number of 10,505 students, who registered in the first semester of 2011 academic year. Sampling size accounts for about 30-40% of total student population for each school. To accompany the English test, a survey instrument with questionnaires was also developed to gather relevant self-reported data from the same groups of vocational students who took the language test. Data drawn from these questionnaires provide measurable variables that can be used as proxies for four main factors, i.e. exposure, efficiency, economic incentive, and wealth, as discussed above, as well as other demographic variables. The variables used in this study are consistent with those suggested by a number of previous literatures, such as, Chiswick and Miller (1995, 1998, 2000), Dustmann (1999), and, more recently, Chiswick and Taengnoi (2007), and Burdria and Swedberg (2010). Details of these variables are shown in Table 1 which is drawn from Saraithong and Chanchaenchai (2012).

Table 1 Definition of dependent variable, independent variables and determinants of English proficiency

Items	Variables	Definition
Dependent Variables	English Test Score: - Vocabulary (VS) - Grammar (GS) - Listening (LS)	These variables are based on a set of test scores measuring achievement in English proficiency in three dimensions of skill: vocabulary, grammar, and listening proficiency with 650 points full marks for each test. A lower score is assumed a less English facility or proficiency.
Exposure (EXP)	Experience Abroad (EXPER)	Students had gone to other countries whose population can conduct a good conversation in English. Consequently, they may develop strong interest in acquiring English skill. It takes as the dummy variable: 1=Having experience, 0=No experience.
	Understanding in AEC (UAEC)	Understanding in AEC is measured by scores that individuals correctly answer the questionnaires on the AEC topic. Respondents were asked to answer 12 true-or-false questions about the definition and framework of AEC and their scores are reformulated into percentage form. Higher scores mean good understanding about AEC, indicating students' interest in international economic affairs, then should be more inclined to improve their English language.
	Graduated Secondary School (GSS)	GSS is the type of secondary school where individuals graduated from. This variable is categorized into public school, private school, and non-formal and informal education. The secondary school curriculum is determined by the Ministry of Education in order to assure the standard and quality of qualification, however, school facilities, for example, may be different between public and private

	schools. This different exposure to English may result in differences in the fundamental background of students' English skills. It takes as the dummy variable; 1=Public school, 0=Others
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Table 1 (continue)

	Parents' Occupation (POC)	This variable is defined by categorizing occupations of students' parents into three groups: government service, private company, and business owner and the others. Different organizational culture would provide different experience about opportunity at work which might lead to the different perception about the importance of English proficiency. And this perception can then be absorbed by their children. It takes as the dummy variable; 1=Government service (POCG), 0=Others; 1=Private company (POCP), 0=Others; and 1=Business owner and others (POCB), 0=Others.
Efficiency (EFF)	Levels of Vocational Study (LVS)	This variable records the type of vocational level in which full-time students are currently taking. In Thailand, vocational study, determined by Office of Vocational Commission, is categorized as the certificate level and diploma level. The former is the lower level, accepting students who graduated from secondary schools. Diploma level is higher vocational study, accepting students who already graduated from the certificate vocational level. The certificate level is a three-year program while the diploma level is a two-year program. The level of study could also reveal the exposure of students to English. The longer schooling year is likely for students to be more open and attached to the importance of English. It takes as the dummy variable; 1=Diploma level, 0=Certificate level.
	Fields of Study (FOS)	This variable records the field of study offered by vocational schools under this study. To simplify the model and minimize the number of variables, it is constructed by regrouping the offered field of study into two main groups: commerce/business (e.g. accounting, marketing, business computer, logistics management, general management/secretarial science, retail business, hotel management, business administration, tourism management and information technology), and the others (e.g. home economics, fine and applied arts). It takes as the dummy variable; 1=Commerce, 0=Others.
	Extra Curriculum (EXC)	Extra curriculum is outside school English classes that students currently take or had taken in the past. This variable captures human capital investment, particularly, in language skill which could help students achieve better English learning efficiency compared to the others who had not taken extra courses. It takes as the dummy variable; 1=Having experience, 0=Others.
	Grade Record (GRA)	Grade record is students' average grade of the last semester. It is commonly agreed that students with higher grade are more likely to have the greater level of efficiency to learn English language.
Economic Incentive (ECON)	Plan of Higher Education (PHE): - In Thailand (PHET) - Abroad (PHEA)	This variable is defined by the study plan of students who decide to continue for higher degree after achieving vocational certificate or diploma. In general, higher education requires a higher level of English skills. Therefore, students with plan of higher education would have more incentive to improve their English proficiency. In order to combine the English proficiency into higher education plan under economic incentive encouragement, this variable is also divided into two choices of study plan: Thailand and abroad. It takes as the dummy variable; 1=Having plan, 0=others.
	Plan of Working Abroad/Multinational Company (PAMC)	Plan of working abroad or at multinational company not only expects for better job and wage, but also encourages the English proficiency enhancement to have higher opportunity in job search. It takes as the dummy variable; 1=Having plan, 0=No plan.
	Increment Job Opportunity (IJO)	This is defined as the belief of students that English skill could enhance opportunity in job search. Students who have that positive attitude would intently focus on improving their English skill. It takes as the dummy variable; 1=Increment, 0=No effect.
	Expected Wage (EXW)	According to theory of labor marginalization with maximizing framework, it provides undoubted solution that employers will pay at marginal productivity of labor. The good English skill is generally treated as an extra qualification for recruitment of which brings to considering of recompense. As a result, students who expect high wage payment would steadily put more effort on upgrading their English skill.
Wealth (WEA)	Parents' Income (PRI)	Parents' income is available in monthly. This variable refers to economic background of students' family in order to give more financial support on human capital investment. As a consequence, students with better economic background are expected to have greater English background than the others.
	Student's Income (STI)	Student's income is available in monthly and includes allowance and part time job. The reason of including STI is similar to PRI.

Source: Adapted from Table 1 in Saraithong and Chancharoenchai (2012)

To explain the common characteristics of samples among schools and other variables, the analysis is started with data descriptive statistics, consisting of mean, standard deviation and frequency distribution. The F-test and t-test are also respectively applied for testing the hypothesis of indifferent variance and mean between the pair wise comparisons, divided into three skills across four selected variables, i.e. vocational schools, levels of study, fields of study, and gender. In further, stepwise regression model with OLS analysis is employed to address the explanatory power of potential factors, including four key items (exposure, efficiency, economic incentive, and wealth), on

English proficiency. Each determinant of those four items is shown in Table 6. The estimated regression of English proficiency can be formulated as:

$$SCORE_n = \phi + \sum_{i=1}^4 \alpha_i EXP_{i,n} + \sum_{j=1}^4 \beta_j EFF_{j,n} + \sum_{k=1}^3 \gamma_k ECON_{k,n} + \sum_{l=1}^2 \lambda_l WEA_{l,n} + \sum_{h=1}^5 \omega_h Other_{h,n} + \varepsilon_n$$

where $SCORE_n$ is the English test score of individual respondents or vocational students n , while Φ , α_i , β_j , γ_k , λ_l , and ω_h are the interested parameters to be estimated and ε_n is the disturbance term of individual n to capture the unobserved characteristics that have impact on English proficiency. Letting EXP , EFF , $ECON$, WEA and $Other$ are independent variables and, respectively denote the exposure, efficiency, economic incentive, wealth factors, and other main demographic variables of individual n , and consist of 22 variables, including constant term (see Table 1). This investigation presents 18 estimating equations on vocabulary, grammar, and listening proficiency for each level of study, each field of study, and each gender. The test for explanatory power of each variable in the above equation is under the null hypothesis of individual estimated parameter i , j , k , l and h indifferent from zero; $H_0 = \alpha_i = 0$, for instance. The test statistics for such a hypothesis are t -test statistic at a conventional level of less than 5% significant level ($\alpha < 0.05$) or at a greater than 95% confidence level. It must also be noted that the test scores are used to assess English proficiency in order to avoid the bias of self-measurement and abnormal distribution problem.

IV. Statistic Findings

Before analyzing empirical findings, the preliminary data characteristics should be discussed in more detail, as shown in Table 2 which illustrates the frequency distribution of specific variables from self-reported questionnaires. Among the total number of respondents of 3,760 students, the largest sample group comes from School I, with 33.83%. Of the students under this study, 74.60% study in the certificate level and 85.60% choose commerce as their major field of study. The majority of sample is drawn from female students, accounting for 70.40% of all respondents.

To understand respondents' English proficiency more clearly, the focus is placed more on their various backgrounds. Considering the type of their graduated secondary school, 82.82% of all respondents graduated from public school. As for the family background, 79.25% of their parents own businesses or do some unspecified jobs, whereas 11.89% work in the private sector and another 8.86% work in the public sector. With reference to respondents' past visit to countries communicating in English, only 4.73% of them have experience abroad. Additionally, almost all of respondents or 94.12% said that they plan for higher education after they graduated from their current studies. However, only 3.96% of students who have plan for higher education express the desire for study abroad.

To further this study's statistical analysis, Table 3 shows the frequency distribution of respondents classified by vocational schools taking part in this study, the levels of study, the fields of study, and gender. It can be seen that among 1,272 students from School I, 79.32% study in the certificate level, which is the lower level, and 92.30% choose commerce as their major. 33.41% of School I's respondents are male. As for School II, among its 1,086 students, 62.15% register in the certificate level. As for gender, 82.14% of School II's respondents are female. As for School III and IV, even bigger shares of respondents study in the certificate level, 89.28% and 70.42%, respectively. Different from the others, more than half of School III's respondents take other subjects than commerce as their major field of study. When respondents' gender is considered in detail, it can be seen that about three-fourths of both male and female respondents currently study in the certificate level. A large number of both male and female respondents, 80.32% for male and 87.84% for female, take commerce as their major. When the focus is on the levels of study, among students studying in the certificate level, 84.56% are in the commerce major and 68.41% are female. When the fields of study are considered, among students with commerce major, 73.69% are in the certificate level.

Due to space limitation, some results are not shown in this paper. However, some unreported statistics are worth mentioning. For example, students in diploma level seem to consider that their education is enough for their employment opportunities. Thus, they attach less importance to English skill on job searching opportunities, compared to those in the certificate level. Moreover, students who take the major field of commerce tend to give less account on English skill as a supportive aspect for increasing job opportunities. They, at the same time, are likely to satisfy with their education compared to other fields.

Table 2 Frequency distribution of students classified by demographic characteristics

Items	Frequency (Number of Students)	Percent (%)
Vocational Schools		
School I	1,272	33.83
School II	1,086	28.88
School III	709	18.86
School IV	693	18.43
Gender		
Male	1,113	29.60
Female	2,647	70.40
Levels of Study		
Certificate	2,805	74.60
Diploma	955	25.40
Fields of Study		
Commerce	3,219	85.60
Others	541	14.40
Graduated Secondary School		
Public School	3,114	82.82
Private School	646	17.18
Parents' Occupation		
Government Service	333	8.86
Private Company	447	11.89
Business Owner and Others	2,980	79.25
Experience Abroad		
Having Experience	178	4.73
No Experience	3,582	95.27
Plan of Higher Education		
Having Plan	3,539	94.12
- Thailand	3,390	90.16
- Abroad	149	3.96
No Plan	221	5.88
Plan of Working		
Abroad/Multinational Company	1,819	48.38
No Plan	1,941	51.62
Increment Job Opportunity		
Increment	3,579	95.19
No Effect	181	4.81
Extra Curriculum English Class		
Having/Had	1,211	32.21
No	2,549	67.79
Total Students	3,760	100.00

Source: Table 1 in Saraithong and Chanchaenchai (2012)

Note: % is the percentage of students belongs to each sub-item from the total of 3,760 respondents of four vocational schools.

Table 3 Frequency distribution of students classified by schools, levels of study, fields of study, and gender

Items	Levels of Study				Fields of Study				Gender			
	Certificate		Diploma		Commerce		Others		Male		Female	
	Fre. (#)	%	Fre. (#)	%	Fre. (#)	%	Fre. (#)	%	Fre. (#)	%	Fre. (#)	%
Vocational School												
- School I	1,009	79.32	263	20.68	1,174	92.30	98	7.70	425	33.41	847	66.59
- School II	675	62.15	411	37.85	1,086	100.00	-	-	194	17.86	892	82.14
- School III	633	89.28	76	10.72	325	45.84	384	54.16	300	42.31	409	57.69
- School IV	488	70.42	205	29.58	634	91.49	59	8.51	194	27.99	499	72.01
Gender												
- Male	886	79.60	227	20.40	894	80.32	219	19.68	-	-	-	-
- Female	1,919	72.50	728	27.50	2,325	87.84	322	12.16	-	-	-	-
Levels of Study												
- Certificate	-	-	-	-	2,372	84.56	433	15.44	886	31.59	1,919	68.41
- Diploma	-	-	-	-	847	88.69	108	11.31	227	23.77	728	76.23
Fields of Study												
- Commerce	2,372	73.69	847	26.31	-	-	-	-	894	27.77	2,325	72.23
- Others	433	80.04	108	19.96	-	-	-	-	219	40.48	322	59.52

Note: % is the percentage of students belongs to each interested item from the total of 3,760 participated students of four vocational schools.
Fre.(#) stands for the frequency of the number of students.

The mean values of some specific characteristics of respondents classified by their vocational schools, levels of study, fields of study, and gender are shown in Table 4. School II's respondents, diploma students, commerce students, and female students seem to enjoy higher grade record than the others. School I's students, diploma students, commerce students, and female students show their better understanding about AEC. Among four schools, parents of respondents from School III receive highest income on average. There are insignificant differences between respondents' income across groups. Surprisingly, students at certificate level expect higher wage after graduation than those at diploma level. Meanwhile students in commerce field and female students ask for lower wage after graduation than another group.

Table 4 Mean values of variables classified by vocational schools, levels of study, fields of study and gender

Items	Vocational Schools:				Levels of Study:		Fields of Study:		Gender:	
	School I	School II	School III	School IV	Certificate	Diploma	Commerce	Others	Male	Female
Grade Record	2.72	3.01	2.56	2.82	2.75	2.91	2.81	2.67	2.48	2.92
Understanding in AEC (%)	63.65	58.32	53.80	54.87	58.40	59.32	59.09	55.92	56.91	59.36
Parents' Income (Baht)	17,635.2	14,955.7	18,119.2	14,202.2	16,793.3	14,929.2	16,041.3	17,977.0	19,242.8	15,090.8
Student's Income (Baht)	3,142.2	3,294.2	3,562.5	3,509.4	3,220.6	3,650.5	3,271.5	3,693.8	3,336.4	3,327.7
Expected Wage (Baht)	19,973.9	17,178.1	21,619.9	16,853.2	19,897.8	15,975.5	18,302.2	22,468.2	20,369.1	18,284.6

In order to provide a clearer picture of respondents' English ability, unreported results on students' test scores according to their levels of study, fields of study, and gender are discussed. In general, the mean values of the three test scores are rather low, ranging from the lowest score of 147.78 for listening test to 168.72 for vocabulary test and the highest score of 214.13 for grammar test, against the full mark of 650 for each test. The mean test scores of these three skills can primarily indicate the general picture of English language capability of vocational students under study here. In brief, diploma students show their better skills than certificate students. Students with commerce major also fare better than those from other fields of study. Unsurprisingly, female has higher average score than male does. However, the differences in listening test scores between groups, whether classifying by the levels of study or the fields of study or gender, are much smaller, comparing with other test scores. This means that regardless of the classification of students, among all three skills, English listening proficiency is the worst.

The pair tests for homogeneous variance and mean are presented in Table 5. For all pair wise comparisons, test results suggest that the homogeneous variance of vocabulary scores across groups cannot be rejected while that of grammar scores is rejected in all groups. Meanwhile the homogeneity of variance in the case of listening scores exhibits mixed results. It can be said that grammar is the most volatile skill while vocabulary skill is less volatile, in two group comparisons. As for the homogenous variance tests with the reject results, the t-tests for mean differentiation between pairs are thus followed the unequal variance condition with the Satterthwaite's degree of freedom.

Table 5 Group test for homogenous variance and mean on students' English test scores

Pair Groups	Dimensions of English Skill		
	Vocabulary Score	Grammar Score	Listening Score
Test Result: Hypothesis of homogenous group variance			
Levels of Study (Diploma-Certificate)	Accept (F=0.91, sig.=0.075)	Reject (F=0.84, sig.=0.001)	Reject (F=0.79, sig.=0.000)
Fields of Study (Commerce-Others)	Accept (F=0.97, sig.=0.619)	Reject (F=1.163, sig.=0.019)	Accept (F=1.11, sig.=121)
Gender (Female-Male)	Accept (F=0.97, sig.=0.578)	Reject (F=0.76, sig.=0.000)	Reject (F=0.88, sig.=0.001)
Test Result: Hypothesis of indifferent group mean			
Levels of Study (Diploma-Certificate)	Reject Mean diff.= 12.24 (t=3.80, sig.=0.000)	Reject Mean diff.= 9.48 (t=4.80, sig.=0.000)*	Accept Mean diff.= 1.08 (t=0.42, sig.=0.670)*
Fields of Study (Commerce-Others)	Reject Mean diff.= 19.84 (t=5.00, sig.=0.000)	Reject Mean diff.= 12.54 (t=4.65, sig.=0.000)*	Accept Mean diff.= 6.30 (t=1.87, sig.=0.062)
Gender (Female-Male)	Accept Mean diff.= 4.14 (t=1.35, sig.=0.176)	Reject Mean diff.= 7.72 (t=11.8, sig.=0.000)*	Accept Mean diff.= 1.31 (t=0.49, sig.=0.622)*

Source: Adapted from Table 5 and 7 in Saraithong and Chancharoenchai (2012)

Note: F stands for F-statistic for homogeneity of group variance. sig. is significant level.

Mean Diff. is mean difference, t-stat is the value of t-statistics,

* the degree of freedom is the Satterthwaite's degree of freedom under the condition of unequal variance across group comparisons.

For the analysis on the homogeneity of mean English test scores between groups of students, t-statistic values reveal the significant levels for several pair comparisons. The levels of study, fields of study, and gender can cause differences in students' grammar mean scores. On the other hand, equal mean scores hypothesis in the case of listening skill cannot be rejected in all pair wise comparisons. This result together with the lowest mean scores of listening test could be explained by the nature of Thai language which is quite distant from English, resulting in listening being the weakest English skill of Thai students, regardless of their levels of study, fields of study, and gender. Interestingly, according to unreported findings, ones who have plan of higher education aboard and plan of

working at foreign corporation, and the belief of increase in job search opportunity have significantly higher mean scores than others in most sub-group comparisons. Group with taking extra English classes and studying in diploma level, and female students seem to have better proficiency with the exception of listening skill.

The above findings imply that students' characteristics enable them to have different English skills, leading to different test scores. They are also consistent with the findings of Chiswick and Miller (2007) and their other works, as discussed earlier, which show that increases in the level of education are associated with immigrants' better English proficiency. In contrast, Dustmann and Fabbri (2003) among other works indicate that males have a significantly higher probability to be fluent in language due to responsibility as a head of the family. However, it must be mentioned that those studies' focus is on immigrant group sample.

V. Empirical Results

This study employs stepwise regression to address the relationship between students' English language ability and the five groups of independent variables, which, according to the human capital theory framework, have been identified as the determinants of language proficiency acquisition. As shown in Table 1, dependent variables are the scores of three English skill tests. Independent variables include several variables selected and grouped under the four main conceptual factors, namely exposure, efficiency, economic incentive, and wealth. Moreover, some demographical characteristics, i.e. respondents' gender and school, are also included in the stepwise analysis. Summary of all variables used in the regression estimation is presented above in Table 1.

The results of stepwise estimations show various patterns of the explanation of English proficiency in vocabulary, grammar, and listening skills which are indicated by test scores. Table 6 elaborates the statistic findings from stepwise regression associated with OLS estimation in detail. It demonstrates the predictive power of 22 independent variables that are used in the regression on each of the three English test scores.

In general, all four factors, namely exposure, efficiency, economic incentive, and wealth, can provide a good assessment for English test scores since all 18 estimated equations can, to a certain extent, be explained by, at least, one of them. Efficiency seems to have strong impact on students' proficiency in vocabulary and grammar whereas exposure carries less explanatory power for listening skill. This result is not consistent with Saraithong and Chanchaoenchai (2012), which finds no explanatory power of exposure effects on students' grammar skill. However, it should be noted that this earlier work's estimation does not distinguish test scores between groups of students. Instead, their estimation is based on the full sample group of students.

Students' grade record (GRA) and plan of working abroad or at multinational company (PAMC) have the strongest explanatory power for English proficiency. Their statistical significance can be found in 16 and 15 cases, respectively, from the total of 18 cases estimated in this study. These two variables' positive significance is an unsurprising outcome. Having good grade record strongly emphasizes students' solid educational background, leading to efficiency in English learning. Plan of working abroad or at multinational company could work as an incentive for students to put more effort on improving their English proficiency, so that they could improve their job opportunities. This finding is similar to Burdria and Swedberg (2010) which present that immigrants' plan to stay in Spain has a significant and positive influence on their Spanish language improvement. Additionally, this finding also highlights the notion of human capital investment in terms of knowledge accumulation.

When considering the statistical significance of exposure factor in detail, it can be seen that all variables in this group are statistically insignificant in explaining English proficiency of students who are not in commerce major or male students. Among the six variables in this group, understanding in AEC (UAEC) seems to have the strongest predictive power as it can significantly determine students' English skill for eight cases. This could be a result of searching for knowledge on AEC through various media and sources would inevitably expose students to English language. Furthermore, understanding about AEC and its importance to the Thai economy could help motivate students to improve their English ability so that they can secure better career and job opportunities in the future. This is consistent with a recent work, Tubergen and Kalmijn (2009) argue that, for immigrants in the United States, the degree of globalization of their country of origin has a positive effect on pre-migration exposure to English.

It is interesting to find the statistically negative significance of student's income (STI) in explaining English proficiency. This means that increasing in student's self earning, perhaps by doing part-time jobs, could deteriorate their English proficiency. This might be explained by the trading off of time-spending preference between working after school and self-studying or taking extra curriculum English classes. The negative significance of GSS indicates that graduation from public secondary school could adversely affect students' English proficiency. Public school could possibly offer inferior English language teaching facilities, thus less exposure of students to language practice,

consequently lower test scores. The positive significance of PRI in this study indicates the importance of wealth as a determining factor for vocational students' English proficiency since the higher parents' income, the higher opportunities for students to access English training, especially for listening skill. As for gender, male is statistically significant in explaining students' language skill in the case of vocabulary. This is very much in line with Dustmann and Fabbri (2003). On the other hand, according to earlier statistic findings for mean difference, they reveal that females generally have higher mean scores than males have for all three skills.

The positively and statistically significant explanatory power of levels of study (LVS) on vocabulary and grammar scores underlines the impact of education level on students' English proficiency. However, this significance takes place only in the case of students with commerce major and female students. This could possibly indicate the weak explanatory power of education variable in this study. This can be considered inconsistent with the findings of a number of earlier studies on the determinants of language skills, for example, Chiswick and Miller (2000, 2007); Chiswick, Lee, and Miller (2002); Burdja and Swedberg (2010), and so on. This can be explained by the difference in the education level under this study, between the diploma and certificate levels, which is quite small, i.e. only two years, leading to limited explanatory power of the levels of study variable here.

Another interesting point is on the significance of schools in explaining their students' English language skills. It can be seen that the effect of being enrolled in School III and School IV on their students' English ability is statistically and significantly negative. These results demonstrate that factors related to vocational schools, such as locations, management policies and academic environment, could play a key role in shaping their students' English skills. They could also accelerate or decelerate students' language proficiency.

Table 6 Results of OLS estimation on English proficiency of vocational students with stepwise regression

Variables	Levels of Study						Fields of Study						Gender						
	Certificate			Diploma			Commerce			Others			Male			Female			
	VS	GS	LS	VS	GS	LS	VS	GS	LS	VS	GS	LS	VS	GS	LS	VS	GS	LS	
Exposure:																			
- EXPER																			
- UAEC	(+)			(+)	(+)	(+)	(+)	(+)										(+)	(+)
- GSS	(-)			(-)			(-)	(-)										(-)	(-)
- POCG	(+)						(+)												
- POCP							(-)												
- POCB																			
Efficiency:																			
- FOS																			
- EXC	(+)	(+)					(+)	(+)	(+)									(+)	(+)
- GRA	(+)	(+)	(+)	(+)	(+)		(+)	(+)	(+)	(+)	(+)			(+)	(+)	(+)	(+)	(+)	(+)
- LVS							(+)	(+)										(+)	(+)
Economic Incentive:																			
- PHE	(+)	(+)						(+)							(+)				
- PAMC	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)			(+)			(+)	(+)	(+)	(+)
- IJO			(+)								(+)								(+)
- EXW																			

Wealth:																		
- PRI			(+)			(+)			(+)							(+)		
- STI				(-)			(-)										(-)	
Others:																		
- GEN	(+)						(+)											
- School																		
• School I		(+)																
• School II																		
• School III	(-)	(-)	(-)	(-)	(-)		(-)	(-)			(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
• School IV	(-)	(-)		(-)	(-)		(-)	(-)				(-)	(-)		(-)	(-)		
Constant	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)
Obs (#)	2,602			891			3,007			486			1,031			2,452		
Adj-R ²	0.085	0.096	0.015	0.077	0.119	0.016	0.085	0.099	0.016	0.061	0.062	0.008	0.093	0.093	0.028	0.081	0.084	0.012

Note: Sign in bracket is the estimated sign of significantly explanatory power of each specific variable at a conventional level of less than 5% significant level ($\alpha < 0.05$) or at a greater than 95% confidence level.
Adj-R² is the statistic value of adjusted R-square.
obs. is the number of observation which refers to the vocational students who took the English tests and answered the questionnaires.
Blank cells indicate the statistical insignificance at a conventional level of that specific variable.

VI. Conclusion and Recommendation

As the 2015 deadline for AEC is looming, its arising opportunities and threats start to appear for Thai labors both at home and abroad. To either materialize these opportunities or survive the threats, they need to overcome their several shortcomings especially their weak English proficiency, comparing with other AEC workers. However, dealing with this issue needs to know factors influencing workers' English capability. Therefore, this study aims to investigate the determinants of English skills, including vocabulary, grammar, and listening, of vocational students with three different groups of characteristics, namely, the levels of study, the fields of study, and gender. These students form a large pool of potential workers coming to the labor market. This study is undertaken based on the human capital theory and applies the conceptual framework of the determinants of language acquisition to develop 22 independent variables. They are categorized into five main items, including exposure, efficiency, economic incentive, wealth, and other demographic factors.

The stepwise regression analysis provides statistical evidence of the significantly explanatory power of some variables. The model is estimated separately on three English skills in 18 equations according to the levels of study, the fields of study, and gender. In each of these equations, some of 22 independent variables are found to be statistically significant in determining students' English proficiency. The model, developed based on the model of language acquisition, seems to provide a good assessment for students' language proficiency. The study finds that among the four main factors, efficiency seems to have strong impact on students' proficiency in vocabulary and grammar whereas exposure carries less explanatory power for listening skill. When considering each and every variable in detail, it can be seen that students' grade record (GRA) and plan of working abroad or at multinational company (PAMC) have the strongest explanatory power for English proficiency. This model can best explain vocabulary skill, followed by grammar skill. Listening is the skill that can be least determined by this model.

An implication of this study for education and labor policies is that prospective workers' success in improving English proficiency partly lies in their own characteristics. Therefore, policy measures, for instance, public-sponsored training programs, should be implemented according to the differences in the characteristics of students/labors. And the coverage of this implementation should be across groups of vocational students and workers in general. Furthermore, these training programs should take into account that the weakest English skill of vocational students is listening. Additionally, this is not the focus skill in the Thai tertiary education English curriculum, even

though it is the skill that used most in the workplace (Wiriyaichitra, 2002). Thus, any English training program should intensively focus on listening skill improvement.

Moreover, in the intermediate to long term, the continuing increase in human capital investment both by the public and private sectors together with a raise in awareness and understanding of how globalization can enhance job opportunities could encourage vocational students to prepare themselves for the intense competition in the liberalization era.

Author's Biography

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