

IMPACT OF ELEARNING IN FOREIGN DIRECT INVESTMENT ON THAI MANUFACTURING SMEs

Thavorn Rochanaporn*

Abstract

The objective of the study was to develop an eLearning in Foreign Direct Investment (FDI) using Facebook for the Thai manufacturing Small and Medium Enterprises (SMEs). The study was conducted using Learning Management System (LMS) and data was collected using structured questionnaires from manufacturing SMEs entrepreneurs in five provinces of lower northern Thailand. This study applied stratified random sampling techniques. Descriptive analysis, paired sample *t*-tests, and Spearman correlation were used to measure the relationships. It was found that participants showed significant improvement in their knowledge and understanding in FDI after completion of the course ($P < 0.01$). Moreover, a significant positive correlation was reported between ease of use and overall satisfaction, while a non-significant relationship was found between speed of teaching and overall satisfaction as well as design and overall satisfaction. Multiple regression was employed to examine factors influencing the intention to use the eLearning in FDI via Facebook. Three factors had a statistically significant impact on the intention to use, i.e. enhanced skill development, enhanced business performance, and enhanced learning behavior. Practical implications were proposed and discussed.

Keywords: Foreign Direct Investment, SMEs, eLearning, Facebook

INTRODUCTION

The internet has brought about a change in the growth and development of education, especially the eLearning platform. All over

the world, countries are increasing their expenditure on eLearning. One of the major beneficiaries is the small and medium enterprise (SMEs) sector, which is the backbone of many economies. SMEs comprise around 99.7%

*Thavorn Rochanaporn is a Ph.D. Candidate in eLearning Methodology, Graduate School of eLearning, Assumption University. He holds a Bachelor Degree in Industrial Management from Rangsit University, Thailand and a Master degree in IT Project Management from De Paul University, Chicago, USA. This research was under the supervision of Assoc. Prof. Dr. Chitapa Ketavan and Dr. Pornpop Saengthong. Currently Thavorn Rochanaporn is working as Managing Director of AP Furniture Company Limited and Managing Director of AP Digital Company Limited.

of business ventures within Thailand. SMEs are significant in the provision of innovation and employment opportunity. Notably, SMEs are drivers of growth in economies around the world and in Thailand, and account for 60% of the total employed population (Kotelnikov, 2007).

At present, the Thai government has strong policies to promote Thai SMEs as well as to make economic outflow to countries that have lower wages than Thailand. Since the value of Thai Baht currency is strong against the \$US, it is a good chance to make outflow. However, there are several factors influencing outflow, such as the limited knowledge in Foreign Direct Investment (FDI). This is considered to be one major problem for Thai SMEs, so they need to urgently prepare themselves. The Prime Minister's impassioned speech to the Joint Foreign Chambers of Commerce (JFCC), encouraged foreign investors to support Thailand both internally through direct investment and externally through international trade. He stressed the need for private investors, as well as SMEs entrepreneurs, to become more actively involved. The Prime Minister also confirmed that he stands ready to work with the private sector and external partners in order to increase Thailand's internal strengths and enhance competitive measures. In this context, knowledge in FDI is considered as one of the major factors in succeeding to work together with other SMEs' knowledge in business. (Thailand Investment Review, Special Issue 6, 2017).

The contents of FDI are grouped into several categories, therefore, this knowledge and data are shared using social media (Bank of Thailand, 2017.) The social media platform "Facebook" seems to be the most practical,

comprehensive, and cost effective for Thai manufacturing SMEs. According to Mahmud (2010), eLearning involves learning experiences that are enabled by electronic sources such as the internet, intranets/extranets, satellite broadcasts, interactive TV, CD-ROM and audio-video tapes, and mobile and wireless applications. As stated by Khan (2003), a successful eLearning system is characterized by a high rate of acceptance by all parties and is beneficial for all concerned parties such as learners, tutors, support staff, and the learning institution as a whole. The apparent state of disillusionment for eLearning initiatives in SMEs and schools in Thailand can be addressed by adopting the proposals made by Ertl et al. (2007). They came up with three proposals to help counteract the process of disillusionment and other challenges that are present in the initial stages of eLearning. The first suggestion is that technology ought to be adopted in learning if its use reflects a new learning culture in a given context. The second proposal was that it should be mandatory for academics and training programs to integrate eLearning into their current training culture. The last one states that eLearning systems should be learner centered, which helps to ensure that the focus of eLearning programs is on the learner and not on the technology. The need for SMEs to invest more in training their employees is a key factor for eLearning. According to Thassanabanjong et al. (2009), the management of SMEs plays a big role in exploring the different training options and selecting the ones that fit the needs of their firms. eLearning offers SMEs a method of training employees that is cost effective and efficient. In order to enhance eLearning for SMEs it is more essential to train professionals to act as e-trainers for employers of family-

run SMEs that to focus on technology, (Koring, 2005).

In addition to connection purposes, social networks can be used as a platform for learning. Some examples of social media, include Facebook, Twitter, MySpace, YouTube, and LinkedIn among others. Facebook has been found to be one of the most practical ways to enhance knowledge and has been widely used to educate people and to disperse a wide range of information. Stakeholders in SMEs frequently use Facebook to discuss case studies, recap, and to get project briefings or form study groups.

However, the use of eLearning among SMEs depends very much upon the size of their business. The large firms tend to use more electronic learning than small ones. Nevertheless, the government policy to promote SMEs should not be overlooked if the entrepreneurs want to be successful in their business. Even though the level of performance of Thai SMEs entrepreneurs in service sectors is higher than those of the manufacturing sectors, it was found that different SMEs sectors had different business profits (Koonnathamdee, 2013). This may be affected by various factors such as finance and knowledge of employees. As a result, foreign investments are commonly found only in the Makong Sub-Region countries (CLMV). Thus, the SMEs entrepreneur should focus more on knowledge in order to develop and expand their business globally.

This study aims at developing a model of eLearning in FDI using Facebook for Thai manufacturing SMEs in the lower northern part of Thailand, including Nakhon Sawan, Uthaitхани, Kamphangphet, Pichit, and Phitsanulok (The Office of Strategy Management North S2, 2017.). The improved

knowledge of those using Facebook and the SMEs entrepreneurs' satisfaction and intention to use Facebook were studied. It is expected that using social media will not only increase the accessibility of information but also create an interesting learning environment. Most important, this use will also increase the Thai manufacturing SMEs productivity.

OBJECTIVES

- 1) To develop eLearning in FDI for manufacturing SMEs in Thailand;
- 2) To study improved knowledge developed by Facebook;
- 3) To examine the satisfaction of SMEs owners towards the use of eLearning in FDI;
- 4) To investigate factors affecting learners' behavioral intention to use *Learning Management System* (LMS.)

RESEARCH METHODOLOGY

This research applied various methods such as research design, combining qualitative and quantitative approaches in order to assess the impact of the eLearning model for Foreign Direct Investment (FDI) and examining the SMEs entrepreneurs' satisfaction and intention to use the eLearning model. The mixed methods model was selected to provide comprehensive and complete information about FDI to SMEs in the manufacturing sector.

The research was conducted in 6 steps as shown in Figure 1

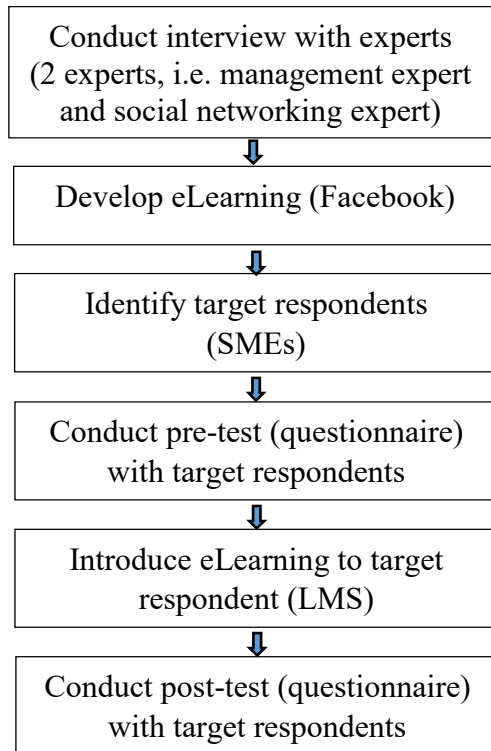


Figure 1: Research Process Flow

Developing eLearning Model in FDI

After interviewing the experts, the FDI model was developed. It has seven modules designed using Facebook as the major form of social media. The contents were designed based on knowledge from several sources, such as the Thai government, non-governmental organizations (NGOs), and international information. The seven modules were in Thai in order to facilitate learning.

Research Instrument Development

First the questionnaire was developed then the validity test and the reliability test were conducted. The aim of the questionnaire was to measure the knowledge and understanding

of FDI developed through the eLearning course on Facebook. Participants were assessed on their level of knowledge and understanding of FDI (pre-test) and after completing the eLearning module, they were administered the post-test.

The questionnaire includes four parts:

Part 1: General Information; (demographic and Internet information).

Part 2: Information about knowledge and understanding of FDI, eLearning, and information technology.

Part 3: Users' opinions of the Facebook training experience.

Part 4: Users' satisfaction and intention to use.

Parts 1 and 2 were included in both the pre-test and post-test, while Parts 3 and 4 were included only in the post-test. Part 1 used categorical items for data collection. Parts 2, 3, and 4, used a five-point Likert scale (Likert, 1932). The interpretation of the results follows this guide and is based on an interval scale of the average score: 1–1.8 low, 1.81–2.6 rather low, 2.61–3.4 moderate, 3.41–4.2 rather high and 4.21–5.0 high.

Validity Test of Questionnaire

The validity of the questionnaire can be determined by using a panel of experts, including two management experts, one social networking expert, one evaluation expert, and one Thai expert (for language translation). The item-objective congruence method was used to assess which items were valid (Rovinelli & Hambleton, 1977). Experts were asked to rate items on a scale of -1 (disagree) to 1 (agree), without knowing the constructs to which they were assigned. After the IOC calculation, items with scores of 0.8 and higher

were included in the questionnaire and followed standard practice.

Reliability Test of Questionnaire

The reliability test was conducted to measure the internal consistency of an instrument using Cronbach's alpha (Bland and Altman, 1997). The Cronbach's alpha value obtained for all variables as shown in Table 1 are higher than 0.7 (satisfactory) which indicates a high degree of internal consistency. Therefore, the questionnaire used for collecting data from respondents in this research is reliable.

Target Population

The Thai manufacturing SMEs from five provinces of lower Northern Thailand, including Nakhon Sawan, Uthaitхани, Kamphangphet, Phichit and Phitsanulok were defined as target groups (strata) in this study. Participants were selected from the list provided by the Department of Industrial Promotion (2556 B.E.) using probability sampling, namely stratified random sampling.

Sample Survey

Questionnaires were given to SMEs in the manufacturing sector of five provinces in lower Northern Thailand. The total population size of the people living there is about 4,670 members.

The Yamane (1967) sample size formula was used to determine the appropriate sample size for this study,

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

Where n=sample size, N=the population size and e = margin of error.

The resulting calculation, using the known sample size (N=4,669) and a standard margin of error of +/-5% (e = 0.05), is:

$$n = \frac{4,669}{1 + (4,669 \times 0.05^2)} = 369$$

Thus, the minimum sample size for this study is n = 369 entrepreneurs. Stratified random sampling is used for illustrating proportional allocation, which shows the total sample size among the strata in proportion to

Table 1: Reliability measure of the items in each variable

Variables	No. of items	Cronbach's alpha
Knowledge and understanding of eLearning information technology	8	0.889
Knowledge and understanding of Foreign Direct Investment (FDI)	9	0.901
User opinions on Facebook	12	0.950
User satisfaction and intention to use Facebook	9	0.710

the strata sizes. As presented in Table 2, the sample is randomly selected from each stratum.

Learning Management System (LMS)

The seven modules of FDI were designed using Facebook. Each module lasted about an hour “45 minutes for knowledge content and 15 minutes for assessment (10 questions for each module). Instructions were given as follows:

- Invite 369 participants to join a closed group on Facebook
- After joining the group, participants started to learn each lesson (module) by themselves
- At the end of each lesson, the participants conducted the test, (10 questions for each module) and submitted the answers of all lessons to the administrator of the group
- The administrator will send the results to each participant’s inbox

Pre-test and post-test were conducted as follows: the pre-test was administered prior to logging onto the LMS and the post-test was

administered after completion of all seven modules. Results from the test as well as data obtained from questionnaires were then collected for further analysis.

RESULTS AND DISCUSSION

1. eLearning in FDI Design and Approach

Two experts were interviewed for this research based on their expertise in different areas that address the issues of FDI. One specializes in management and has some experience in using the Internet, and the other has experience using social media and has knowledge of FDI and business.

The eLearning in FDI made using Facebook were comprised of seven modules. The modules were in Thai and used multiple types of information, including text, graphics, and diagrams to ensure that SMEs entrepreneurs were engaged with different types of learning styles. The contents of each eLearning module were obtained from several sources, such as the Thai government, regional agencies, non-government organizations (NGOs), and international information. Each module was designed to take about an hour in

Table 2: Number Selected for a Proportional Stratified Random Sample

Provinces	Number of companies*	Sample Size
Kamphangphet	679	54
Nakhon Sawan	1,640	130
Phitsanulok	1,346	106
Pichit	659	52
Uthaithani	345	27
Total	4,669	369

**Source: Department of Industrial Promotion (2556 B.E.), personal contact*

total (45 minutes for content and knowledge and 15 minutes for the assessment test). Each module consists of 10 questions in order to assess the participant's knowledge and understanding of FDI.

Contents of FDI in each module (Chapter) were listed as follows:

Module 1: Overview of Foreign Direct Investment

- Introduction
- Definition of FDI
- Trend in FDI

Module 2: Impacts of Foreign Direct Investment

- Positive Impact
- Negative Impact
- Competitors
- Entering Market

Module 3: Vertical and Horizontal FDI

- What is Vertical FDI?
- What is Horizontal FDI?

Module 4: Creating an Investment Promotion Strategy

- FDI Opportunities
- Investment Promotion Strategy
- How to Choose Location?

Module 5: Building Effective Partnership

- How to Facilitate Relationships and Partnerships
- What Kinds of Activities Should be Undertaken in Partnership

Module 6: Strengthening the Location's Image

- Location Advantage
- Action Plan to Improve Location's Image

Module 7: Thai Government Policies on Foreign Direct Investment

- Government Policies
- Risk Warranties
- Loan Warranties

- Tax Privileges
- Government Support

Samples of FDI on the Facebook page are shown in Figures 2 and 3.

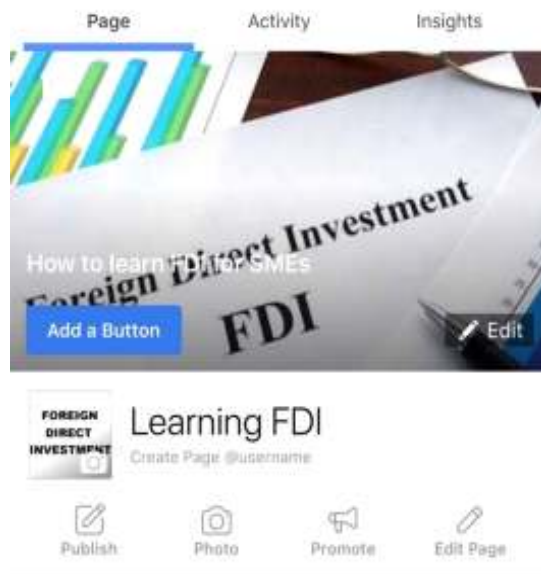


Figure 2: FDI on Facebook page



Figure 3: Courseware of FDI on Facebook

2. Demographic Profile of Participants

The demographic and personal information of 369 samples were collected and analyzed. Details are presented in Table 3.

The majority of samples were females (59.1%), while the rest were males (40.9%). Most of the participants were 31-40 years old (36.1%). The second largest group of participants was 30 years old and under, and the smallest amount of participants were 41-50 years old and more than 50 years old (35.2%, 19.5% and 9.2% respectively). Most of them held an undergraduate degree (46.1%), followed by high school and under (19.5%), vocation (15.2%), graduate and over (10.3%), and higher vocation (8.9%). About

one-third of respondents had less than 11 years of work experience, followed by 11-20 years (31.6%), 21-30 years (18.2%) and over 30 years (17.1%).

3. Knowledge Improvement

To determine whether the SMEs' knowledge and understanding about FDI improved, a paired sample *t*-test was applied for comparing the Pre-Learning and Post-Learning achievement scores of 369 entrepreneurs. The results showed that the learners' Post-Learning achievement mean scores (Post-test) were significantly higher than their Pre-Learning (Pre-test) scores at the 0.01 level (Table 4).

Table 3: Demographic profile of participants

Demographic characteristics	Number (n=369)	Percentage
Gender		
Male	151	40.9
Female	218	59.1
Age (Year)		
30 and under	130	35.2
31 – 40	133	36.1
41 – 50	72	19.5
51 – 60	34	9.2
Education		
High School and Under	72	19.5
Vocation	56	15.2
Higher Vocation	33	8.9
Undergraduate	170	46.1
Graduate and Over	38	10.3
Work Experience(Year)		
10 and under	122	33.1
11 – 20	177	31.6
21 – 30	67	18.2
Over 30	63	17.1

Table 4: Paired Samples *t*-test Comparing Pre-test and Post-test Scores

Variable	Pre-test Mean (SD)	Post-test Mean (SD)	<i>t</i> -value	<i>p</i> -value
Knowledge and understanding of Foreign Direct Investment (FDI)	3.10 (0.769)	4.33 (0.490)	-25.523	0.000*

4. Measurement of Learners' Satisfaction

As shown in Table 5, the learners' overall satisfaction score towards the eLearning model was rather high (4.14). It indicated that the learners found that Facebook in FDI was useful and practical for implementation. Correlation analysis was used to identify and measure the importance of components or aspects of satisfaction (i.e. ease of use, layout, module content, teaching speed, and visual design) on overall satisfaction. Results in Table 5 show that ease of use, layout, and module content were significantly related to the overall satisfaction ($r_s = 0.613$ ($p < 0.01$), $= 0.372$ ($p < 0.01$) and $= 0.227$ ($p < 0.01$) respectively), while a non-significant relationship was reported between speed of

teaching and overall satisfaction, as well as design and overall satisfaction.

5. Factors Affecting Learners' Behavioral Intention to Use LMS

The learners were asked to rate their intention to use LMS. The rating scale had a scale from 1-5, therefore a mean of 4.25 can be interpreted as a high level of intention to use LMS. Multiple linear regression analysis were used to assess the impact of opportunity to learn, enhance learning behavior, enhance business performance, and enhance skill development upon the intention to use LMS. Referring to Table 6, it was observed that 3 factors were statistically significant at the 0.01 level. The standardized coefficients showed

Table 5: Mean, Standard Deviation and Correlation between Variables

Variables/Components	Mean	SD	Spearman's Correlation					
			1	2	3	4	5	6
1. Ease of use	4.09	0.969	1					
2. Layout	4.13	1.026	0.694*	1				
3. Module content	3.70	0.737	0.338*	0.370*	1			
4. Speed of teaching	3.75	0.919	0.262*	0.223*	0.313*	1		
5. Design	3.14	0.721	-0.294*	-0.166*	0.163*	0.063	1	
6. Overall satisfaction	4.14	0.711	0.613*	0.372*	0.227*	-0.009	0.007	1

* Correlation is significant at the 0.01 level (2-tailed).

Table 6: Summary of Stepwise Multiple Regression Analyses for Predicting Ratings of the Intention to Use LMS

Variables/Factors	Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i> -value
	b	SEb	Beta		
Enhance skill development	0.387	0.047	0.408	8.302	0.000*
Enhance business performance	0.332	0.060	0.324	5.526	0.000*
Enhance learning behavior	0.168	0.049	0.173	3.446	0.001*
F(3, 365) = 298.455, R-Square = 0.710, Constant = 0.529					

* $P < 0.01$

that enhanced skill development had the standardized coefficient with the largest absolute value (0.408), followed by enhance; business performance and enhanced learning behavior (0.324 and 0.173). Therefore, enhanced skill development was the most important factor affecting learners' behavioral intention to use LMS. In addition, the 3-factor model was able to account for 71% of the variance in learners' behavioral intention to use LMS, $F(3, 365) = 298.455$, $p < 0.01$, $R^2 = 0.71$.

CONCLUSION AND IMPLICATION

This study aimed to explore the impact of eLearning in FDI on Thai manufacturing SMEs. The eLearning was designed using Facebook as the major form of social media. Results from the study revealed several evidences to conclude that this eLearning platform with Facebook as the prominent form of social media was an effective and practical way to provide knowledge about FDI to manufacturing SMEs, Thai learners, and SMEs entrepreneurs. Participants who studied FDI through the LMS showed significant increases in knowledge developed. It can be clearly noted that the perceived ease of use of the

eLearning platform was directly related to learners' satisfaction; when the perception increases, learner's satisfaction also increases. Moreover, perceived enhanced skill development, i.e. team management skills and readiness for business competition, seemed to be the most important factor influencing learners' behavioral intention to use eLearning.

The target population who participated in this research was only the SMEs in the manufacturing sector in the lower Northern provinces of Thailand, not nationwide. The other sectors of SMEs (e.g. service, trading etc.) were not included in this study. Therefore, as mentioned earlier, development and application of eLearning in FDI should be expanded to all SME sectors, in order to confirm and clarify the results. According to the experts' and learners' recommendations, a complete version of Facebook to cover all aspects of knowledge for SMEs should also be developed in the near future.

The Thai government tries to convince and support Thai SMEs to invest outbound, especially in Greater Mae Kong Sub Region (CLMV) (Thailand Investment Review, 2017). Thai SMEs entrepreneurs still lack knowledge about FDI in particular and about foreign investment. They need more time to

prepare themselves, therefore an eLearning platform that utilizes various kinds of social media seems to be an appropriate tool to improve SMEs' knowledge, especially because some SMEs owners do not require their employees to be trained outside of work because of costs and fear of diminishing work hours. eLearning can help to reduce cost and save employers more time than outside training because eLearning is a mode of study that people can participate in anywhere and at anytime. In addition, eLearning is considered to be a practical channel to exchange opinion among SMEs entrepreneurs who are interested in FDI.

REFERENCES

- Bank of Thailand. (2017, August). Foreign Direct Investment Classified by Business Sector of Thai Enterprises. Retrieved from <http://www2.bot.or.th/statistics/ReportPage.aspx?reportID=656& language=ENG>
- Bland, J. M., and Altman, D. G. (1997). Statistical Notes: Cronback's Alpha, *British Medical Journal* vol. 314 p.572.
- Ertl, B., Winkler, K., & Mandle, H. (2007). E'Learning: Trends and Future Development. In Neto, F.M., & Brasileiro, F. V. (Eds.), *Advances in Computer-Supported Learning*. (p.122-144)
- Foreign direct investment, net inflows (BoP, current US\$) | Data | Table, Data. worldbank.org. Retrieved 17 November 2012
- Khan, B. H. (2010). A Framework for ELearning. Retrieved September 6, 2012 from <http://asianvec.com/bookstoread/framework/>
- Koonnathamdee, P. (2013). A Turning Point for the Service Sector in Thailand. ADB Economics Working Paper Series. No.353, June 2013. P3-8. Retrieved from <https://www.adb.org/sites/default/files/publication/30300/ewp-353.pdf>
- Koring, H. (2005). Advisor Training and Development, NACADA Clearinghouse of Academic Advising Resource, Retrieved September 8, 2012, from http://www.nacada.ksu.edu/Clearinghouse/AdvisingIssues/adv_training.htm.
- Kotelnikov, V. (2007). *Small and Medium Enterprises and ICT*. Asia-Pacific development information Programme. Bangkok, Thailand.
- Likert, R. (1932). A technique for the measurement of attitudes, *Archives of Psychology* 140, 1–55.
- Mahmud, K. (2010). eLearning for tertiary level education in least developed countries: Implementation obstacles and way outs for Bangladesh. *International Journal of Computer Theory and Engineering*, 2 (2).
- Nagai, K. (2012). Small & Medium Enterprise Development Policies in Thailand. P160-161. Retrieved from <http://www.asean.org/storage/images/archive/documents/SME%20Development%20Policies%20in%206%20ASEAN%20Member%20States%20-%20Part%202.pdf>
- Rovinelli, R. J., & Hambleton, R. K. (1977). On the use of content specialists in the assessment of criterion-referenced test item validity. *Dutch Journal of Educational Research*, 2, 49-60.
- Thailand Investment Review (2017). "Open for Business: The Next Chapter in Thailand's Competitiveness" Prime Minister's speech addressed to the Joint

- Foreign Chambers of Commerce in Thailand (JFCCT) Nov. 25, 2016. Special Issue 6, Jan. 2077.
- Thassanabanjong, K, Miller, P & Marchant, T (2009). Training in Thai SMEs. *Journal of Small Business and Enterprise Development*, 16 (4), 678-693.
- The Office Of Strategy Management North S2 (2017). Retrieved from <http://www.thailowernorth.com/webosm/home.html>
- Yamane, T. (1967). *Statistics: an introductory analysis*. New York: Harper and Row.