PRODUCTION OF INDUSTRIAL TECHNICIAN MANPOWER IN THAILAND: PROBLEMS AND SOLUTIONS

Bulanchai Udomariyasap

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Bulanchai Udomariyasap

School of Public Administration

Assistant Professor.....Major Advisor

(Nattha Vinijnaiyapak, Ph.D.)

Professor.....Co-Advisor

(Anchana Na Ranong, Ph.D.)

The Examining Committee Approved This Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Public Administration.

Professor.....Committee Chairperson

(Chaiwat Khamchoo, Ph.D.)

Assistant Professor.....Committee

(Nattha Vinijnaiyapak, Ph.D.)

Professor.....Committee

(Anchana Na Ranong, Ph.D.)

Professor.....Committee

(Anek Laothamatas, Ph.D.)

Assistant Professor.....Dean

(Pairote Pathranarakul, Ph.D.)

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ABSTRACT

Title of Dissertation	Production of Industrial Technician Manpower in Thailand: Problems and Solutions
Author	Miss Bulanchai Udomariyasap
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The purposes of this dissertation are, firstly, to study problems of the industrial technician production in Thailand and secondly, to analyze methods used to solve those problems.

Based on the results of the study, the only role and responsibility of the Office of the Vocational Education Commission is to increase the quantity of the industrial technician production without paying attention to labour market demand. There has been very little cooperation among relevant public sectors, each of which usually works on its own, especially in the case of the cooperation among the Office of the Vocational Education Commission, the Department of Skill Development and Thailand Professional Qualification Institute (Public Organization) in determining professional standards.

Besides, the study found that there has been little cooperation between the public and private sectors in the industrial technician production in Thailand. It means that although there has been more cooperation between these two sectors in the joint commission in the industrial technician production recently and although they have just begun to plan to work together more since 2009, it has been only in policies but has not yet accomplished except for the Automotive Industry and the Automotive Parts and the Petrochemical Industry.

In terms of the industrial technician production to meet labor market demands both in quantity and quality, it was found that the removal of the ministers of the Ministry of Education and the disunity of the administrative section make the policy

(both in the strategic clarity and the implementation of the policy) discontinuous and ineffective.

Furthermore, the confidence of the industrial sector in supporting the production system and developing labor skills and the integration of the production information and the demand for labor play an important role in determining workforce planning in the industrial sector to meet labor market demands systematically. This is consistent with the hypothesis of the study that the politics and the integrating work directly affect the industrial technician production in Thailand.

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Bulanchai Udomariyasap

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CHAPTER 1

INTRODUCTION

1.1 Background and Problem Statement

The National Education Act B.E. 2542 (1999) Section 81 of the Constitution of the Kingdom of Thailand B.E. 2540 (1997) determined to reform the whole education system. Particularly, Section 20 of the National Education Act B.E. 2542 (1999), Amendment (Second National Education Act B.E. 2545 (2002)) and Amendment (Third National Education Act B.E. 2553 (2010)) stated that

> Vocational education management and professional training are provided in public schools, private schools, establishments or cooperation between schools and establishments according to the law on vocational education and related laws.

Then, the Ministry of Education State Administration Act B.E. 2546 (2003) Section 10 divided the center of the Ministry of Education into six main divisions which are 1) The Office of the Minister 2) The Office of the Permanent Secretary, the Ministry of Education 3) The Office of the Education Council 4) The Office of the Basic Education Commission 5) The Office of the Higher Education Commission and 6) The Office of the Vocational Education Commission. The Office of the Vocational Education Commission (VEC) is responsible for vocational education management according to the National Education Act B.E. 2542 (1999). On March 6, 2008, the VEC announced the Vocational Education Act B.E. 2551 (2008) which was about vocational education management and professional training of state schools, private schools and establishments in order to manage vocational education and professional training at all levels so that they were qualified and efficient and benefited people especially students and university students in accordance with the National Economic and

Social Development Plan and the National Education Plan (Office of the Vocational Education Commission, 2009).

Section 16 of the Act requires the establishment of "Vocational Institution" as an institution of higher education and vocational technology. The purpose is to provide education, promote academic and advanced professional expertise, science and technology transferring research, religion preservation, arts, culture, and environment conservation as well as give academic and professional services to societies (Office of the Vocational Education Commission, 2009). Furthermore, Section 9 requires the Office of the Vocational Education Commission to manage vocational and professional training at vocational certificate level, vocational diploma certificate level and bachelor's degree level in the fields of technology and operation. The Vocational Education Commission determined a curriculum for knowledge or professional skills or further education which could be held as a project or for specific target groups.

In addition, Sections 13-15 of the Vocational Education Act B.E. 2551 (2008) states that the Vocational Education Commission has the authority to determine the rules in establishing, aggregating and separating vocational schools or institutes. This means that aggregating vocational schools to establish an institute shall be made through the advice of the Vocational Education Commission, taking into account the collaboration to maximize the use of shared resources. This is stipulated in the Ministerial Regulation and in accordance with section 15. The Institute is a legal entity and a government agency under the Office of Vocational Education Commission (Office of the Vocational Education Commission, 2009). As can be seen from the interview on November 3, 2009, Jurin Laksanawisit, Minister of Education at that time, said that the establishment of institutes of vocational education was very necessary and must be dealt with promptly to meet the objectives.

> The aggregation of colleges to establish institutes of vocational education will help prepare for the provision of the education at the bachelor's degree level and encourage resource sharing. It strengthens colleges so that they can become specialized institutions and is a preparation for the integration of the ASEAN Community in 2015. Importantly, it encourages young Thai people to

study in vocational institutes more. In the future, we want 65% of the students to choose vocational education 35% general education. Nevertheless, at present, over 50% of the students choose general education while the rest of them choose vocational education. However, the colleges are not aggregated at one time. They are gradually established in the ready provinces. However, 19 institutes of vocational education consist of 1 Institute of Vocational Education: Bangkok which is the aggregation of 21 colleges in Bangkok, 5 Institutes of Vocational Education:: Central province clusters, 3 Institutes of Vocational Education: Southern province clusters, 1 Institute of Vocational Education:: Eastern province clusters, 5 Institutes of Vocational Education:: North eastern province clusters, and 4 Institutes of Vocational Education:: North province clusters. After that, the VEC must determine rules for establishing these institutes. (Office of the Vocational Education Commission, personal communication, November 3, 2009).

Chinnaworn Boonyakiat, the subsequent Minister of Education, reiterated the needs to establish institutes of vocational education because it is the policy of the Ministry of Education and must be implemented by the intention of the national education plan and education reform policy in the second decade. This can be seen through the order for Sasitara Pichaicharnarong, Secretary General of the Vocational Education Commission, to revise the ministerial regulation draft of the establishment of institutes of vocational education and propose the new ordinance after the withdrawal due to legal problems. Chinnaworn Boonyakiat "gives a policy and precipitates the implementation in the following three matters: 1) the Secretary General of the VEC needs to discuss with the board of the VEC which provides instructions regarding establishing Institutes of Vocational Education for the same conclusion 2) for the establishment of Institutes of Vocational Education it must issue a ministerial regulation for the cabinet's approval, so the VEC have to put the new ministerial regulation into the consideration of ordinance urgently, and 3) the establishment of Institute of Vocational Education further study at the bachelor's degree level, the VEC is assigned the well-organized colleges with enough instruments and personnel to run these institutes" (Office of the Vocational Education

Commission, 2009, p. 14). Meanwhile the conflict between Sasitara Pichaicharnnarong and the board of the VEC had strongly intense.

Then, in time of Suchart Thadathamrongvech Council of Ministers, the cabinet approved the establishment of 19 vocational institutions announced by the ministerial regulation of vocational school combination for establishing institutes of vocational education B.E. 2555 (2012) which was published in the Government Gazette on 27 June 2012. It consists of five central vocational education institutes, four northern vocational education institutes, three southern vocational education institutes, one eastern vocational education institute, five northeastern vocational education institutes, and one institute of vocational education, Bangkok (Manager, 2012b).

The next Minister of Education was Chaturon Chaisang He signed the notification of the Ministry of Education on the opening of the program of the bachelor's degree in technology or operation for 9 Institutes of Vocational Institutes, 2013, in spite of the ministerial regulation of the Ministry of Education, 2012 mentioned to the establishment of 19 institutes. When there was a proposal to offer education at the bachelor's degree level in other 10 vocational institutes, such a proposal was suspended due to the opposition to the policy of Chaturon Chaisang. He firmly stated that he wanted to increase the proportion of vocational students to students in general education, making it become 51:49 respectively within 2015. He gave such an interesting interview about the importance of vocational education and medium labor shortage solving that (Daily News, 2014)

> I have already said since I became the Minister of Education that the vocational education will not focus on bachelor's degree except for some majors that need to continue so or are really helpful. Importantly, it must have students and is of good quality. Moreover, it has to limit the number of students without having to change the value of the vocational education. At present, Thailand needs to focus on teaching to develop labor skills. Therefore, the VEC does not need to offer the education at the bachelor's degree level. However, some presidents of the Institute of Vocational Council may disagree. Nonetheless, I have to do it because if I turn to focus on the bachelor's degree level, I must be going in the wrong direction and we are all

going to lose the chance of industrial growth. It also results in unhealthy vocational certificates and vocational diplomas. The establishments need vocational and diploma labors more than those with a bachelor's degree. If we want to meet their demands, we must produce adequate and quality workforce with vocational education and diplomas.

Meanwhile, the establishment of the Institute of Vocational Education has also been questioned by many parties in terms of quality of the institutions, concentration of courses, readiness of professors and the place of teaching including quality assurance and labor market demand meeting in the future. At this point, it reflects the failure of vocational education management in Thailand at present that never achieves the objectives which are to increase the proportion of vocational students, the quality of teaching in vocational certificates and vocational diplomas, and the development of quality of the graduate production to meet labor market demands all along.

In addition, the question about the reasons and necessity of raising the education level of vocational education is also an issue that should now be considered in conjunction with the management of technology or operating. If we consider the higher education institutions with a bachelor's degree curriculum in technology or operating, such as Pathumwan Institute of Technology, Group of King Mongkut's Institute of Technology, i.e. King Mongkut's Institute of Technology Ladkrabang, King Mongkut's Institute of Technology North Bangkok, King Mongkut's Institute of Technology Thonburi including the group of nine Rajamangala Universities of Technology, we will see that the latter two groups of universities have regional campuses around the country, especially the Group of Rajamangala Universities of Technology which has 36 campuses. Furthermore, 41 Rajabhat Institutes are upgrading to Rajabhat Universities nationwide based on the claim concerning raising the level of education. Moreover, it has also expanded courses from originally only teaching profession to business administration and engineering. This is similar to courses offered at state universities. If there are 19 institutes of vocational education, it may create a problem of excessive supply of higher education management.

However, on returning to consider the vocational management system. It is found that at present the VEC has vocational schools that offer many courses, such as

manufacturing industry, services, agriculture and other specialized professions, such as Royal Goldsmith, fisheries, and shipbuilding. Totally, there are more than 427 vocational schools countrywide. Most of them (136 colleges) are Industrial and Community Education Colleges. Technical Colleges come second with more than 128 colleges. There are also 52 Polytechnic Colleges, 43 Colleges of Agriculture and Technology, and 37 vocational colleges (Office of Vocational Education Commission, 2015). However, the VEC has to face two major problems: the student ratio that is lower than expected and the low quality of graduates. Their skills do not meet labor market demands. Even though currently there is a quality inspection agency, i.e. the Office of Nation Education Standards and Quality Assessment (Public Organization), to ensure that the schools have the production system and workforce development set by Thailand Qualification Framework and Thailand Professional Qualification Institute (Public Organization) to guarantee the competency and the operation capability according to the professional qualification standards (since 2011), the problems still are not alleviated.

In this part, it can be said that it was the problem of public management. Aside from the problem of cooperation which is lacking in the private sectors to organize curriculum development and internships as in the advanced industry countries, it still lacks the work integration between the Office of the Vocational Education Commission (VEC) and the Office of the Basic Education Commission (OBEC) to get students to continue education. It also reflects the conflict between the two agencies in budget usurpation. The VEC receives less budget than does the OBEC. The VEC receives about two per cent of budget while the OBEC gets about 63 per cent of the Ministry of Education budget in terms of their responsibilities to provide basic education to children throughout the 12 years. Meanwhile the OBEC can also extract additional budget from the headcount subsidies in basic education by the proportion of general education that is more than vocational education all along. It results in resource shortage in the vocational education management in terms of budget, staff and teaching materials. The severity of this problem reflects through the interviews by Sompong Jitradab (Manager, 2013).

The most important issue that is hardly mentioned is the usurpation of children and subsidies from the government. It has been hidden for so long and is the main reason why the general schools are not releasing their children to study in the vocational system. A decrease in the number of children is associated with the headcount subsidy and position and academic standing of administrators and teachers. Therefore, the general schools will do everything not to let their children go, such as quarantining certificates. Currently, the rate adjustment of headcount subsidy for senior high school in general is 3,800 Baht/person/year while vocational education gets headcount subsidy divided into majors: Industrial 6,500 Baht/person/year, Commerce 4,900 Baht/person/year, Home Economics 5,500 Baht/person/year, Fine Arts 6,200 Baht/person/year, General Agriculture 5,900 Baht/person/year, and Reform Agriculture 11,900 Baht/person/year. The vocational schools will receive headcount subsidy more than will the general because vocational teaching requires more tools. In the previous year, there were 480,000 vocational students. The VEC received headcount subsidy budget and free money in 15 years for more than 4,863 million Baht. The budget is divided into headcount subsidy (2,828 million Baht), school books (940 million Baht), school supplies (216 million Baht), uniforms (432 million Baht), and the development activities (446 million Baht). Therefore, if the number of students in general schools is increasing, the large sum of headcount subsidies of vocational students will be transferred to the general education of the OBEC immediately.

Besides, the shortage of vocational teachers is one of the problems that the VEC has faced all along. Aside from the government official shortage, the schools have to hire contract teachers to solve the problem at hand. They have to take the headcount subsidy from the students to pay for those contract teachers as well. However, in the past, the graduates from the engineering program in Electrical Industry from Rajamangala University of Technology and King’s Mongkut University of Technology were exactly trained to be vocational teacher, now they prefer to be an engineers in factories rather than working as teachers because of the

better pay. However, the teachers that the university is producing right now do not meet the VEC demands, such as those teachers in Textile Technology and Field Crop. Moreover, these teachers can teach only theory, not practice. Importantly, in the near future, it is expected that a lot of vocational teachers will be retired. This directly reflects the overlapping between the education policy and the workforce production.

Meanwhile, when considering the overall education management in Thailand nowadays, we found that there are other schools that provide vocational education, such as Chitralada School (vocational education). The school has offered Business Computer Curriculum, Business Administration Program in Retail Business Curriculum, Electrician Curriculum in Vocational Certificate since 2004, and now it also offers Higher Diploma of Technology or Burapha University Commerce College which has arranged a diploma program in International Trade Management. Besides, the pre-engineering school KMUTNB and Rajamangala University of Technology Lanna also have a program that offers vocational certificate in pre-engineering in three majors, including mechanic, electrical and electronics, and construction, together with university education. The curricula provided by the two universities may reflect the low quality of vocational graduates which may not be in accordance with their requirements.

Moreover, the Higher Diploma of Technology policy in both universities mentioned above which are the industrial universities with high reputation and acceptance from the society, including Pathumwan Institute of Technology, which is the model of vocational education in industrial technicians in Thailand under support from overseas since the beginning of the economic development, especially the nine Rajamangala Universities of Technology and 36 campuses scattering around the regions has a good point in giving a chance for vocational graduates to directly further their study in Higher Diploma of Technology, it also has many disadvantages, such as the lack of technology-skilled teachers, students' lacking of motivation to further their study in Higher Diploma of Technology (because there is not an institute that has reputation in producing quality graduates for a long time), and the high number of institutes of vocational education scattering around the regions.

Besides, there are also vocational education managements under the cooperation with private sectors. Central Retail Corporation Company is cooperating

with eight universities (Valaya Alongkorn Rajabhat University under the Royal Patronage (Kingphet), Suan Sunandha Rajabhat University, Phranakhon Rajabhat University, Dhonburi Rajabhat University, Rajamangala University of Technology Phra Nakhon, Rajamangala University of Technology Krungthep, Rajamangala University of Technology Thanyaburi, Rajamangala University of Technology Rattanakosin) to do the project "Young Professional Retailer". The project gives students who participate in the project scholarships all through the program without any expenses. Besides, the participants will get 260-300 Baht a day on the training days including job support. Moreover, they will have a chance to be a department manager in CRC Group after they graduate, etc (Manager Online, March 13 2012, Online). The private sectors also established their own Corporate University, such as Panyapiwat Institute of Management of CP All or in the case of the cooperation with the private sectors in vocational education management to meet labor market demands in the industrial sector, such as Maptaput Technical College (V-ChEPC), Nakhon Sithammarat Seaboard Industrial College, and in the university, such as Thai-Nichi Institute of Technology. It was established in 2005 to produce graduates to meet the members of Technology Promotion Association (Thailand-Japan) demands. The PIM has arranged the university level curriculum in Engineering and Administration since 2007. The objective is to produce personnel to support CP ALL Company (Public Organization) demands. In this case, the PIM is in the status of Corporate University.

Under the context of the education reform that has begun since 1999, which is now still in the second decade (2009-2018) reform, we found that the Thai education system has changed and improved in many areas. For example, at the university level, there is a mission transferring from university under public sector to "National University". Basic education is decentralized to locals, so they can manage the education appropriately themselves which will be only before primary education, professional training and informal education. Vocational education is still under the public sector and is expanding to university level despite the fact that many sectors agree that the vocational education management in Thailand has totally failed all along both in the proportion of students and in the quality of education. Although it has been the main policy of many governments, it has never accomplished once, such as the aim to make the proportion of vocational students to students in the general education system 60: 40.

The questions are: 1) what is the problem of vocational education management in producing industrial technicians of the government at present? 2) why can't it produce students to meet labor market demands both in quality and in quantity? The government has to have roles in managing the vocational education and in establishing the institutes itself to meet labor market demands of the private sector. At the same time, the government has offered too many vocational education curricula both in diploma and higher diploma of technology. It has offered more than the education market demands. Therefore, the researcher are focusing on the study to answer why the industrial technician production in Thailand in the past could not respond to workforce demands of the private sector both in qualiy and quantity and how the problem could/should be solved.

1.2 Research Questions

1.2.1 What is the problem of the Thai industrial technician production?

1.2.2 What should be the resolution to the problem?

1.2.3 How should the industrial technician production be improved?

1.3 Research Objectives

1.3.1 To study the problem of the industrial technician production in Thailand

1.3.2 To study and analyze the way to improve the industrial technician production in Thailand.

1.4 Scope of the Study

This research will study only the policies related to the vocational workforce production of major industrial technicians. We do not study graduates in the following majors: Department of Commerce, Department of Economics, Department of Agriculture, Department of Arts, Department of Textile Industry, Department of Fisheries Industry and Department of Tourism Industry. It will also study vocational policies and consequences of the policies, such as the education reform policy, the

National Economic and Social Development Plan, the industrial policy, the policy and strategy of workforce production and development of the country, etc. This case study has begun since the education reform in 1999 until now.

1.5 Research Hypothesis

The hypothesis of this research is that the political factors, including the change of the Ministers of Education and the lack of administrative unity, affect the work integration and the operation of government agencies, i.e. the Ministry of Education, the Ministry of Labor and Social Welfare, the Ministry of Science and Technology, and the private sector's support in industrial technician production of the country including the work integration between public and private sectors.

1.6 Research Methods

In this research, the researcher mainly studies the qualitative study method and information analysis by using process tracing. It is the method that tries to search for or empirically explore possible causes and effects of a phenomenon (Little, 1998, p. 211). Moreover, it is the method that needs information from primary and secondary documents, such as documents and government publications, i.e. public announcement, agency level policy, legislation, Act, ministerial regulations including the National Economic and Social Development Plan, texts, articles, Thai and abroad studies as well as interviews related to government official's occasions, administrators in the government related to policy determination process including players in the sectors such as Ministers of Education, Secretary-General of the OBEC, the VEC including private sector entrepreneurs and technocrats.

Aside from the study of research documents, the researcher also collects information from the formal and informal interviews from key informants which are the representatives of players such as representatives given by the government agencies, i.e. Secretary-General of the OBEC, Secretary-General of the VEC, the Office of National Education Standards and Quality Assessment, Secretary-General of the Office of the National Economics and Social Development Board, Rajamangala

University of Technology Thanyaburi, KMUTNB. Political parties are Education Commission, Senate, Entrepreneur Association especially F.T.I., The Thai Chamber of Commerce and the Board of the Trade of Thailand including experts and technocrats at economy, industry and education development as well as the school directors who cooperate with the private sector systematically, such as BanKhai Technical College, Sattahip Technical College and MapTaPut Technical College (Chemical Engineering Technician Development Project in Vocational Diploma or V-ChEPC), etc.

1.7 Operational Definitions

1) Technical Labor refers to semi-skilled labor or labor that has senior high school education or higher including vocational certificate and vocational diploma.

2) Vocational Education refers to the Vocational Education Act B.E. 2551 Section 4 which specifies that "vocational education means the education process that produces and develops workforce in skilled and technical technology" in accordance with section 9. Section 9 specifies that "vocational education and professional training in Sections 6, 7, and 8 are arranged to three levels of curriculum by the VEC as follows: Vocational Certification, Vocational Diploma and Higher Diploma of Technology or Operating. The VEC may provide the curriculum for knowledge or skill in career or further study which is held in the project or for the specific target group". Therefore, vocational education means education management that produces and develops workforce at professionals in vocational certificate or equal to senior high school level and diploma or vocational diploma and Higher Diploma of Technology or Operating. Vocational schools are divided into two types of commission which are the VEC and the OPEC Ministry of Education.

3) Vocational School refers to 15 types of College/Training Center under the VEC, such as Technical College, Industrial and Community Education College, College of Business Administration and Tourism, Commercial College, Arts & Crafts College, Polytechnic College, Vocational College, College of Agriculture and Technology, the Golden Jubilee Royal Goldsmith College, Technology College, Fisheries College, Agricultural Engineering Training Center, College of Technological

and Management, the College of Technology and Shipbuilding, and Science Based Technology Vocational College

4) Institute of Vocational Education refers to vocational schools aggregated by the ministerial regulation about "the aggregation of vocational schools for establishing 19 institutes of vocational education B.E. 2555" being divided into provincial clusters in each region and approved to offer the teaching by the Ministry of Education announcement on "Higher Diploma of Technology or Operating 2013 Curriculum and enforced since the first semester of 2013 as follows:

Institute of Vocational Education Bangkok which consists of Minburi Technical College, Kanchanaphisek Mahanakhon Tech. College, Don Mueang Technical College, Dusit Technical College, Rajasitharam Technical College, Saowabha Vocational College, Thonburi Vocational College, Intrachai Commercial College, Bangna Commercial College, Chetuphon Commercial College, Thonburi Commercial College, The Golden Jubilee Royal Goldsmith College, and Kanchanapisek Vocation Training College Nong Chokand or

Institutes of Vocational Education Central 1 which consists of Nonthaburi Technical College, PathumThani Technical College, Thanyaburi Technical College, Pathumthani Vocational College, Saraburi Technical College, Saraburi Vocational College, Ayutthaya Technical College, Automotive Industry Technician College, Shipbuilding Industry College, and Ayutthaya Vocational College

5) Industrial Technician refers to the nine majors determined by the VEC: Mechanical and Maintenance, Metallurgical, Electrical and Electronics, Construction, Printing, Glasses and Lenses, Shipbuilding, and Rubber Goods. However, Vocational Diploma also has 17 additional Majors. Some of them are more sophisticated than others, such as separating electrical from electronics, Architectural Technology, and Communication. However, another part is further studying in the new majors, such as Mining Engineering, Environmental Engineering and Disaster Prevention, and Mitigation, etc. Therefore, for the overall understanding, the definition of "Industrial Technician" is those who study in professional majors which are not Commerce, Home Economics, Agriculture Arts, Textile Industry, Fisheries Industry, and Tourism Industry.

6) Vocational Education Management DVT refers to vocational education management that comes from an agreement between school or institute and establishment in curriculum management, studying management, training management and measurement and evaluation. Students spend part of their time in the school and another part of their time in the establishment.

7) Political Factor refers to the change of Ministers of Education and the lack of administration unity.

8) Integration Factor refers to the coordination between government agencies, such as the Ministry of Education, the Ministry of Labor and Social Welfare, and the Ministry of Science and Technology and Public Private Coordination.

9) Government Agencies refer to the important government agencies that implement the policy. In this study they consist of the Ministry of Education, the Ministry of Labor and Social Welfare and the Ministry of Science and Technology and Public Private Coordination.

10) Private Agencies refer to the agencies that have important roles in producing industrial technicians with government agencies. In this study, they consist of establishments, industrial groups, TCC, and F.T.I.

1.8 Benefits of the Study

The findings can be used to improve and produce industrial technicians in the Thai society. It will be the vocational education administration system reform that comes from the cooperation between the main players, the government, vocational schools, entrepreneurs and F.T.I both in quality and quantity. It will affect value change in vocational education, an adjustment of labor wage by quality and skill to meet labor market demands, stability strengthening and good quality of life to vocational students. Students will want to further study in higher education or choose to enter the labor market with confidence and knowledge. It will increase the capacity in the competition of the country including the database for institutes, agencies and public organizations. Moreover, other public organizations are seeking ways to cooperate with the private sector systematically which will be beneficial to the overall development of the country in the future.

CHAPTER 2

VOCATIONAL EDUCATION SYSTEM MANAGEMENT AND SEMI- SKILLED DEMAND SITUTATION

In this chapter, the researcher will focus on the overview of vocational education management and demand for labor at the middle level, so we can have the basic information for understanding the problems of vocational education management in Thailand.

Besides, there are a brief analysis of the successful pattern of vocational education management in foreign countries and a summary of problems of demand and trends of demand for labor after the ASEAN Economic Community (AEC). The contents are as follows:

2.1 Vocational Education Management

2.2 Vocational Education Management in Foreign Countries

2.3 Vocational Education Management Problems and Workforce Demand

2.4 Workforce Demand Trends and Free Flow of Labor after the AEC

2.1 Vocational Education Management

Vocational Education Act B.E. 2551 (2008) is given the meaning of "Vocational Education" as follows:

Section 4 "Vocational Education" means to produce and develop workforce in vocation at the craftsmanship, technique, and technology levels.

Section 6 "Vocational education management and vocational training must be an educational management in vocation corresponding with the National Economic and Social Development Plan and the national education plan to produce and develop workforce in vocation at craftsmanship, technique, and technology levels, and an improvement in vocational education to meet labor market demands by using the knowledge of theory (universal and Thai intellect) to develop capability in

practice and capacity until an educated person can earn a living as a practitioner or a self-employed individual."

In conclusion, "vocational education" means a study procedure and a vocational training to produce and develop qualified workforce at craftsmanship, technique, and technology levels to meet labor market demands, and the self-employed both in a diploma and a bachelor's degree to correspond with the economy and social development of the country.

In this part, it is about the fundamental information of vocational education which is the production system of vocational workforce, policy and vocational workforce strategy. The details are as follows:

2.1.1 The Production System of Vocational Workforce

The production of vocational workforce in Thailand is operated by several units, such as the Ministry of Education, the Ministry of Culture, the Ministry of Tourism and Sports, the Ministry of Labor, etc. The Ministry of Education has a major responsibility for vocational education. Sub-units in the Ministry of Education are responsible for the production of vocational workforce, such as the Office of the Vocational Education Commission (VEC), the Office of the Basic Education Commission (OBEC), the Office of the Higher Education Commission (OHEC), the Office of the Private Education Commission (OPEC: under Permanent Secretary).

The Office of the Vocational Education Commission (VEC) takes care of a total of 421 schools across the country. The Office of the Basic Education Commission (OBEC) is responsible for 331 vocational and technology private schools, and the Office of the Private Education Commission (OPEC) takes care of, encourages, supports and coordinates with private education management at lower level than bachelor's degree according to the law of private education. However, the Office of the Vocational Education Commission (VEC) has a variety of schools, such as national universities, state universities, private universities, Rajabhat universities, Rajamangala universities of Technology, Community colleges, and Pathumwan Institute of Technology.

The Ministry of Culture has the Fine Arts Department to operate and manage education in three Colleges of Fine Arts, 12 Colleges of Dramatic Arts across the

country and the Bunditpatanasilpa Institute. The Ministry of Tourism and Sports has government service which is the Department of Physical Education. The Department of Physical Education has 12 Institutes of Physical Education and Sports Schools in subordination (primary education and secondary education) across the country. Seventeen Institutes of Physical Education have courses in vocational certificate, high vocational certificate, certificate of higher education and bachelor's degree.

The Ministry of Labor has government service of the Department of Skill Development to train and develop labor skills for people at working age, preparing them for work and developing their higher labor skills including encouraging and supporting private sectors to participate in developing labor skills. It provides a short-term course of different occupations in 12 institutes for skill development and 63 centers for skill development across the country.

Nowadays there are nine major offices in seven ministries:

1) The Royal Thai Police, subordinate to the Office of the Prime Minister.
2) The Ministry of Interior.
3) The Ministry of Agriculture and Cooperatives.
4) The Ministry of Transportation and Communications.
5) The Ministry of Defence.
6) The Ministry of Public Health.
7) The Ministry of Science Technology and Environment.
8) The Bangkok Metropolis.
9) The Thai Red Cross.

Some of these offices have a specific course that meets vocational education demands and technology. For example, the Provincial Electricity Authority (PEA: the Ministry of Interior) is responsible for PEA schools. The Civil Aviation Training Center (the Ministry of Transportation and Communications)prepares many courses of vocational education. The Communications Authority of Thailand (CAT) takes care of the posts and telecommunication schools. The State Railway of Thailand takes care of railway technical schools and the Phra Dabot School (non-formal education). However, in this part, we will discuss only the workforce production of industrial technicians in the Office of the Vocational Education Commission (VEC).

2.1.1.1 Generality

The Office of the Vocational Education Commission (Department of Vocational Education) is one of the six major offices under the Ministry of Education. The Administration Act B.E. 2546 (2003) Section 10 states that "the division of the organization in the center of the Ministry of Education should follow this Act by having the Head of Government directly to the Minister of Education" as follows:

1) The Office of the Minister
2) The Office of the Permanent Secretary
3) The Office of the Education Council
4) The Office of the Basic Education Commission: OBEC
5) The Office of the Higher Education Commission: OHEC
6) The Office of the Vocational Education Commission

The Government services (2) (3) (4) (5) and (6) represent a corporation and a department by the law of Government Administration Regulations" (Banleng Sornnin, 2005, p. 17).

In addition, the ministerial regulations of the Office of Vocational Education Commission B.E. 2546 define missions and divisions of organization of the Office of the Vocational Education Commission as follows (Banleng Sornnin, 2005, pp. 19-23):

1) The Office of the Vocational Education Commission has a mission to provide and promote vocational education and vocational training in consideration of quality and professional excellence. The duties are as follows:

(1) Prepare development plans, proposals, policies, standards and all levels of vocational education curricula.

(2) Implement and coordinate with vocational education standards and vocation.

(3) Determine rules and allocate budget and support resources.

(4) Develop vocational education teachers and staff.

(5) Promote coordinated management of public and private vocational education trainings as well as determine rules and patterns of coordination with other agencies and enterprises.

(6) Monitor, assess and report to vocational education management in both public and private sectors.

(7) Organize, promote and coordinate with a network of information technology and bring the information technology and communication to use in vocational education and vocation training.

(8) Do a secretarial work of vocational education and deal with tasks assigned by vocational education commission.

(9) Perform other tasks stipulated by law which is the authority and responsibility of the Office of the Vocational Education Commission or assigned by the Minister or the Cabinet.

2) The Office of Vocational Education Commission is divided into:

(1) The Director of the Bureau.

(2) The Bureau of cooperation.

(3) The Bureau of Monitoring and Evaluation of Education.

(4) The Bureau of Policy and Planning Education.

(5) The Bureau of Teachers and Vocational Competency Development.

(6) The Office of Vocational and Professional Standards.

(7) The Bureau of Research and Development of Vocational Education.

According to the law, business, property, debt, staffing, government officials, employees, and budget of the Department of Vocational Education except Pathumwan Institute of Technology are transferred to the Office of Vocational Education Commission. The Minister of Education assigns Director-General of the Department of Vocational Education to act in place of the Secretary-General which means the Department of Vocational Education has been transferred to the Office of the Vocational Education Commission.

The Office of Vocational Education Commission is responsible for 427 public schools. In 2015, there were 434,663 vocational certificate students and 670,457 high vocational certificate students. Therefore, there are a total of 1,105,120 students. The number nearly doubled the year 2013 (652,788 students). There are 158,462 graduates. These schools spread across the country to offer the vocational courses, both in urban and rural area (Office of Vocational Education Commission, 2016).

Table 2.1 Classification and The Number of Vocational Schools

Order	Types of Vocational School	Vocational Schools		
		Sum	**Bangkok**	**Region**
	Total	**427**	**21**	**406**
1)	Technical College	128	5	123
2)	Industrial and Community	136	2	134
3)	College of B.A. and Tourism	4	1	3
4)	Commercial College	5	4	1
5)	Arts and Crafts College	2	1	1
6)	Polytechnic	52	4	48
7)	Vocational Education College	37	3	34
8)	College of Agriculture and Technology	43	-	43
9)	Garden Jubilee Royal Goldsmith College	1	1	-
10)	Fisheries College	3	-	3
11)	College of Technology and Management	9	-	9
12)	College and Technology and Shipbuilding Industries	3	-	3
13)	Science-Based Technology Vocational College	1	-	1
14)	College of Skilled Monks and Novices	1	-	1

Source: The Office of Vocational Education Commission, 2015.

In addition, the administration of the Office of the Vocational Education also groups education and the probe into the 23 institutions spread across the country to offer the vocational courses, bachelor's degree in technology or practice. Each institution consists of several schools and is located in the nearby area. The number varies.

There are 23 institutes of vocational education which are divided into 19 institutes of vocational education and four institutes of vocational education of agriculture. However, 19 institutes of vocational education are established by

gathering 161 vocational schools from 19 province groups (Office of Vocational Education Commission, 2015) which are as follows:

Institute of Vocational Education Central Region 1	10	schools
Institute of Vocational Education Central Region 2	7	schools
Institute of Vocational Education Central Region 3	10	schools
Institute of Vocational Education Central Region 4	9	schools
Institute of Vocational Education Central Region 5	7	schools
Institute of Vocational Education Southern Region 1	11	schools
Institute of Vocational Education Southern Region 2	7	schools
Institute of Vocational Education Southern Region 3	9	schools
Institute of Vocational Education Eastern Region	9	schools
Institute of Vocational Education North-Eastern Region 1	10	schools
Institute of Vocational Education North-Eastern Region 2	4	schools
Institute of Vocational Education North-Eastern Region 3	9	schools
Institute of Vocational Education North-Eastern Region 4	7	schools
Institute of Vocational Education North-Eastern Region 5	9	schools
Institute of Vocational Education Northern Region 1	7	schools
Institute of Vocational Education Northern Region 2	9	schools
Institute of Vocational Education Northern Region 3	8	schools
Institute of Vocational Education Northern Region 4	6	schools
Institute of Vocational Education Bangkok	13	schools

However, the four institutes of vocational education of agriculture were established by gathering 41 agriculture and fisheries schools in each region and are composed of

1) The Institute of Vocational Education of Agriculture Northern Region (nine schools)

2) The Institute of Vocational Education of Agriculture Central Region (10 schools)

3) The Institute of Vocational Education of Agriculture North-Eastern (10 schools)

4) The Institute of Vocational Education of Agriculture Southern Region (12 schools)

The 427 public vocational schools can be categorized into various types depending on their curricula:

1) Technical Colleges.
2) The Department of Commerce.
3) The Department of Home Economics.
4) The Department of Agriculture.
5) Fine Arts.
6) Textiles.
7) Fishing Industry.
8) Tourism Industry.

Different types of curriculum are as follows:

1) Vocational Certificate. This curriculum is for junior high school graduates. It is for producing and developing workforce so that labors have specific skills.

2) High Vocational Certificate. This curriculum is for vocational certificate graduates or senior high school graduates. It is for producing and developing workforce to have special skills on specific tasks.

3) Higher Diploma in Teaching Technology Mechanical is equivalent to bachelor's degree. Students holding vocational diplomas are admitted. This curriculum focuses on producing professional teachers.

4) Higher of Diploma of Technology or Practical Vocational diploma. Graduates continue their study and finish the education within two years.

5) Specific professional development course. The course is organized at all education levels. The duration of the study lasts 6-225 hours and the 108 profession courses is opened on any occasions. The duration of the study lasts one to four hours.

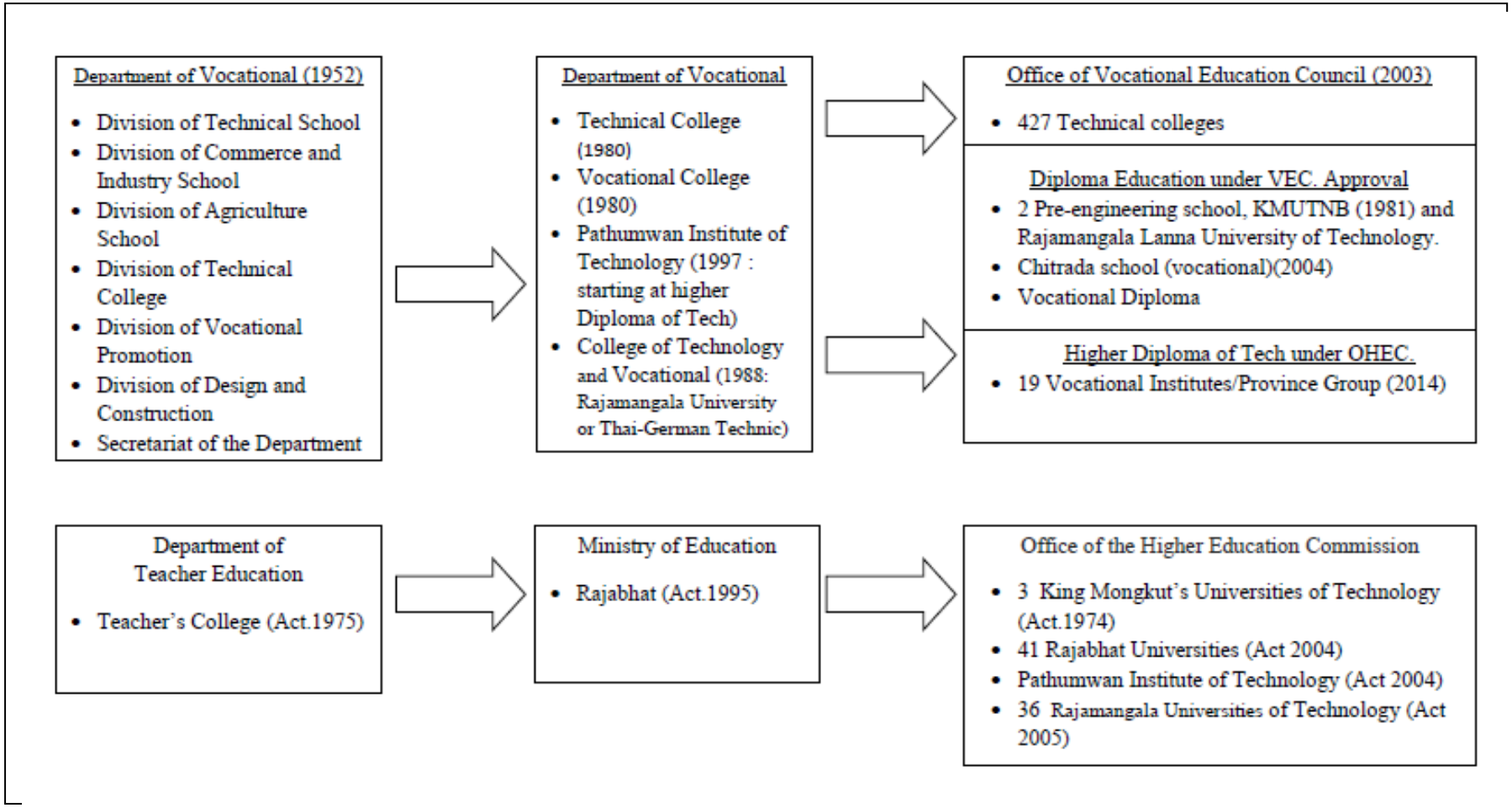

Figure 2.1 Public Vocational Education Administration and Technology

Figure 2.1 shows the development of management systems and technology of government which is under the supervision of the two main agencies. Technician is under the supervising of the Office of the Vocational Education Committee (VEC). Although Rajamangala University of Technology and some King Mongkut's Universities of Technology are opened for Vocational Certificate and High Vocational Certificate, there are a few of them. The engineer level is under the Office of the Higher Education Commission. This curriculum is in the state university, Rajabhat University, Rajamangala University of Technology and King Mongkut's Universities of Technology. Since 2003 the Office of the Vocational Education Commission (VEC) has established vocational schools to teach at bachelor's Degree in technology or operating for high vocational graduates. However, it has to be proved from the Office of the Higher Education Commission. Nowadays beside from universities under the Office of the Higher Education Commission, there are nearly 100 institutions that can produce engineer graduates.

Nowadays the industrial technician production is completely under the regulation and monitoring of the VEC. The National Council for Peace and Order has the order of 8/2559 (2016) dated February 12, 2559 (2016) about the administration of public and private vocational schools to reform education and administration in the Ministry of Education effectively suitably and comply with standards of quality as well as greater flexibility. While in the past the Office of the Vocational Education Commission was responsible only public vocational schools, not include private vocational schools. Private vocational schools were under the Office of the Private Education Commission and Educational Service Area. Therefore, this makes the management of vocation in Thailand a greater of unity.

2.1.2 Strengths and Weakness of the Management of Vocation in Thailand

The Office of the National Education Commission has analyzed the strengths and weaknesses of vocational education management in Thailand (Banleng Sornnin, 2005, pp. 41-43).

2.1.2.1 Strengths

1) There are various agencies to organize Vocational Education and Vocational Training to meet target group demands, a target group of

school age and working age both formal and non-formal education. There are Vocational Education Schools and Vocational Training Centers scattered all regions, provinces and districts.

2) The private sector has an interest to join the vocational education.

3) A number of Technology Institutions of Education have the potential to develop to international standard.

2.1.2.2 Weaknesses

1) Lack of unity in the operation. There is no master plan to bring the capacity of people and guide the direction to develop the country. Besides, there are no exact plans and definite goals to specify workforce demands and develop workforce. Education management and Training focuses mainly focus on Supply Driven or readiness of the organizer and the associated agency. Development of workforce in other agencies lacks cooperation and target to develop workforce for the country which results in the incapability of bringing the resources to use.

2) The poor quality of workforce. There is a lot of poor quality of vocation graduates. They are not ready to work in the enterprises partly due to the course that does not comply with the requirements of the owner of the enterprises. This may result from the inflexible and immobile curriculum in the vocational schools, and the school supplies may be out-of-date. Besides, the management of the study emphasizes in the theory. In practice, there are practice trainings in the schools more than the enterprises.

3) Lack of equality. Students who enrolled in public and private vocational schools are different in outstanding expenses.

4) Lack of research and development. The budget for research and development is very low, so it is unable to create the new knowledge for the innovation to improve teaching, and create different kinds of job consistent with the advancement in technology.

5) Shortage of teacher. The ratio of student and teacher is very high.

6) Lack of cooperation with the owner of the establishment to manage enrollments and a profession. The grants are paid limited and insufficient

motivation. There are too many rules and no cooperation in determining the policy together.

2.1.3 Policies and Strategies of the Vocational Education Workforce Production

Thailand has the major agency involved in policy planning of workforce that is the Office of the National Economics and Social Development Board and the Ministry of Labor. Workforce policy is specified in National Economic and Social Development Plan No.1 until today. In addition, there are major ministries involved in the development of vocational education workforce; the Ministry of Education, the Ministry of Industry, the Ministry of Science Technology and Environment, the Ministry of Information and Communication Technology.

Major agencies for bringing the action plan to develop workforce and support industry section are as follows:

1) The Ministry of Labor is the major organization for taking of labor administration and social welfare.

2) The Ministry of Education is responsible for managing and giving educational service to the public as mentioned in National Economic and Social Development Plan.

3) The Ministry of Industry is responsible for producing and developing staffs in the industrial sector.

4) The Ministry of Science Technology and Environment is responsible for determining policy, plans and projects involved with science and technology work.

Strategy of Production and Development of Workforce of the country in educational reform from 2009 to 2018 of the Office of the Education Council, the Ministry of Education has been planned and targeted in the year 2018 (Office of the Education Council, 2011b, pp. 10-11) as follows:

1) Thai Qualifications Framework and Development of Production System and Workforce in accordance with Thai Qualifications Framework.

2) Establishment of Thailand Professional Qualification Institute for approval of knowledge capacity and capability of operation by Thai Qualifications Framework.

3) Expansion of Dual Vocational Training, Cooperative Education and More of Job Training. The ratio of the student in Dual Vocational Training and Cooperative Education is 30% of vocational education and university students.

4) There is an increase of vocational education students. The proportion of vocational education students to senior high school students of general education is 60:40.

5) There is an increase of labors who have high school education or higher to 65% and they have capacity of vocational standard.

6) Labor Productivity increased 1 % per year since 2011.

Frameworks of operation and development of the production system and workforce (Office of the Education Council, 2011a, p. 11) are as follows:

1) Determining direction of workforce demand and building the operation system of all sectors; professional group, professional association, entrepreneurs/using organizations, educational institutes, and vocational training center/producer.

2) Developing Thai qualification framework for an approval of academic knowledge, capacity of profession of graduates of all levels and types of education and qualification as well as establishing organization to approve capacity of operation by professional standard.

3) Developing the preparedness system and introducing education and profession to persuade students to select by their own proficiency, interests and needs, labor market and strategy of development of the country.

4) Developing the study curriculum by emphasizing a real training for learning in a profession, and expanding Dual Vocational Training, Cooperative Education and Job Training as well as supporting working and studying together for promoting lifetime learning.

To achieving the target and framework, strategies and measures are as follows:

Strategy 1 Reform education for profession

Strategy 2 Develop quality of workforce at all levels

Strategy 3 Accelerate production and development of vocational workforce

Strategy 4 Produce and develop workforce of science and technology, major shortage. Need to develop the country by reforming an education for profession

Strategy 5 Develop capacity and capability of workforce

Strategy 6 Reinforce permanency of production and service sector related to the development of workforce

Strategy 7 Strengthen the strength of teachers, staff of teachers and executives

Strategy 8 Develop system management effectively.

Strategy 9 Build cooperation system and network in production and development of workforce

For Strategy 3, there are nine measures (Office of the Education Council, 2011a, pp. 16-17) as follows:

1) Improve education paradigm. Pay attention to education for profession and promote the value of vocational education for producing qualified staffs and skills in various professions as well as carry forward creating vocational education labors to the production sector and industry.

2) Develop the standard system of competency and transfer system as well as employment and pay by competency including developing an obvious vocational way to attract people to have more interest in studying in vocational education.

3) Promote education on vocational courses (non-formal education) by emphasizing education with the establishment, vocational institutes and community colleges.

4) Support more technical high school education. The graduates who do not want to further study can operate as a semi-skilled worker.

5) Develop professional courses for continuing compulsory education. Provide graduates with skills and vocational knowledge without further study, as well as support education and learning for the self-employed.

6) Develop career guidance since an elementary education for supporting high school students in choosing to further study in vocational education.

7) Adjust teaching methods to encourage technical students to "think and act wisely" and be "good guys" by emphasizing on real practice. The teaching and

learning with the establishment in a "dual" vocational system covering all vocational education nationwide provides the basic knowledge and skills in science and technology to integrate with professional skills for creating high vocational workforce to have the capability in creating technological innovations for the manufacturing sector and service to increase competitiveness.

8) Provide education and vocational learning. Emphasize on practical rather than theoretical aspects for learning and working as a profession to gain real working experience in the establishment. Accelerate to arrange and promote dual vocational system and lower tax guide as well as cooperative education.

9) Support, develop and modernize laboratory/operating system to be convenient for mutual use between institutions. Agencies responsible for this are the Ministry of Education, the Ministry of Labor, the Ministry of Science and Technology, the Federation of Thai Industries and the Board of Trade of Thailand.

In accordance with the drive of Yingluck Shinawatra's vocational policy, the Ministry of Education by the Board of Directors, the Office of Vocational Education Commission determined policies, goals, strategies, production and development of vocational workforce internationally from 2012-2026 (The Office of Vocational Education Commission, 2012c), as follows:

1) Increase the amount of vocational students. Determine goals of operating as follows:

(1) Protect the target of vocational certificate students and increase the amount of high vocational certificate students.

(2) Reduce the dropout problem by placing a target of reducing five per cent of the dropouts with the prevention/individual care and research. Solve colleges/list of programs and analyze system solutions in 50 colleges with high dropout problem.

(3) Teach in the areas and the overview of demand in each branch.

(4) Give an opportunity for students to attend classes with the quota system.

(5) Reach the targets of students and parents and approach strategy.

2) The expansion of opportunities for vocational and professional training.

(1) Arrange vocational training covering all the areas and occupation group and expand target groups.

(2) Establish vocational education institutions in the form of 18 province groups and 19 institutes in Bangkok including institutes of vocational education of agriculture (one for each region).

(3) Establish vocational education of the District in the District of level one.

(4) Promote vocational education of peace, vocational training center, and two systems of vocational education and arrange local vocational courses as well as support scholarships for the disadvantaged.

(5) Produce and develop workforce in the branch that meets labor market demands and is the government's policy as well as increase the competitiveness of the country by organizing vocational training such as the petrochemical training. Build a new generation of agriculture, Thai Kitchen to World Kitchen, renewable energy, logistics/speed trains, jewelry, automotive, electronics, tourism/hotels, etc.

(6) Expand target groups in the basic education schools, vocation for the disabled, vocation for working age, vocation for older age, vocation for women, short-term training/career market, creating and repairing center for the community, knowledge Transfer and experience to further develop Upgrade Skills and Vocational Skills. Organize vocational education in community homes, prisons, military camps and local governments, etc.

(7) Support the unit/the organization to organize vocational education such as the establishments, local governments, and the private sector from various professions, etc.

(8) Manage vocation of alternative, vocation of heir, vocational education college science base, vocation of international and vocation of experience transfer.

(9) Add channels of learning vocational education by adding vocational distance learning and radio network and R-radio network.

3) Enhance the quality of vocational training.

(1) Educational level and classroom level.

Promote quality and create the strength in development, and enhance the quality of vocational education as follows: 1) Develop learning management in constructionism, Project-based Learning Authentic Assessment, and improving skills and experience from the real place and the actual situation such as Fix It Center and a catastrophic case. 2) Develop communication, knowledge management and transfer knowledge from senior teachers to new teachers (supervision) and remote supervision. 3) Strengthen assurance of internal quality, and encourage all colleges to have a test in the external assessment with a high score and prepare for international evaluation. 4) Raise the quality of education for small schools with the purposes of the establishment, the requirements of the area and service of special target such as the disabled, the people of working age, the older people and women. 5) Use of ICT for teaching and learning. Hardware support is available in the media. Promote the contest of media/digital media and the establishment of the model College of ICT using for learning. 6) Develop teachers, build network of teachers, social media and network. Support teachers to conduct research for improvement. 6) Supply the media/books, teaching materials and modern and adequate devices.

(2) Student Level.

Enhance the ability of students to have the competency to compete in both Core Competency and Function Competency by using V-NET, assessment of professional standards, assessment of classroom level. Build the professional skills in the future with activities of professional organizations, and cultivate virtue, ethics, democracy, discipline, encourage life skills, talent, innovation/invention and how to become the entrepreneur. Develop thinking skills on Competency-based Technology-based Green Technology and Creative economy as well as solve the problem of behaviors and take the benefits of time such as becoming a vocational gentleman, scouts, sportsman and controversy prevention/correction controversy.

(3) Prepare the students for the ASEAN community by increasing the number of English Program (EP) and Mini English Program (MEP) academic schools in all provinces. Use curriculum/international media and support international

training/domestic and foreign companies and upgrade English skills in occupation. Promote learning of a partner's language country systems and manage Sister School in every country in ASEAN.

4) Increase efficiency in management.

(1) General Management. Apply the information technology in management such as Web Portal, E-office, Data-based and the positive images.

(2) Budget. Use Strategic Performance, Based Budgeting (SPBB) and Formula Funding by funding the basic needs, equality, policies, the decentralization of purchase, budget and utilities, and sufficient wages for teachers.

(3) The administration. Create the network of teacher/professional associations and recruit adequate employees and government officials including developing the personnel administration system of vocational education institutions.

(4) Build the cooperation of all sectors in the country and abroad for the development and vocation as follows: 1) Organizations/professional associations, the Federal of Thai Industry, the Thai Chamber of Commerce, the Ministry of Labor, the Ministry of Industry, the Establishments in the Dual Vocational Training, etc. 2) Neighboring countries and ASEAN countries 3) International organizations such as VOCTECH, CPSC/APACC, SEARCA and UNIVOC, etc. 4) Countries in regions of the world including China, Israel, Japan, Denmark, Germany, etc. In addition to this, the Ministry of Education has the goal to increase the number of students during the years 2008-2018. The proportion between vocational and general education is 60:40 which would add the number of vocational students of 2.88 per cent per year from 2018 on to maintain such a level in the original as in Table 2.2.

Table 2.2 Goals of Increasing the Students between 2008-2026

Year	**VOC. : High School (general section)**
2008	38.65:61.35
2009	37.12:62.88
2010	36.23:63.77
2011	39.83:60.17

Table 2.2 (Continued)

Year	VOC. : High School (general section)
2012	42.71:57.29
2013	45.59:54.41
2014	48.47:51.53
2015	51.35:48.65
2016	54.23:45.77
2017	57.11:42.89
2018	60.00:40.00
2019	60.00:40.00
2020	60.00:40.00
2021	60.00:40.00
2022	60.00:40.00
2023	60.00:40.00
2024	60.00:40.00
2025	60.00:40.00
2026	60.00:40.00

Source: Office of the Vocational Education Commission, 2012c, p. 42.

Therefore, for the production and development of workforce in the middle level of vocational schools under the Ministry of Education to meet workforce demands in the industry, agricultural, and service sectors, the Ministry of Education promptly had the schools under it increase the quantity of the admission of students. Nowadays, the number of vocational certificate students increases (vocational certificate 1-vocational certificate 3) in the public and private schools under the Office of the Vocational Education Commission between 2013-2016 as presented in Table 2.3.

Table 2.3 The Statistics of Public and Private Students between 2013-2016 Classified by Levels

Education Level/Year	2013			2014			2015			2016		
	Public	**Private**	**Total**	**Public**	**Private**	**Total**	**Public**	**Private**	**Total**	**Public**	**Private**	**Total**
Cer.Voc. 1	161,961	79,153	241,114	160,590	65,491	226,081	171,148	79,092	250,240	169,767	78,025	247,792
Cer.Voc. 2	128,044	80,589	208,633	121,849	74,845	196,694	119,890	67,112	187,002	131,346	66,589	197,935
Cer.Voc. 3	153,390	77,789	231,179	154,830	77,317	232,147	143,625	67,115	210,740	143,211	63,503	206,714
Total Cer.Voc.	**443,395**	**237,531**	**680,926**	**437,269**	**217,653**	**654,922**	**434,663**	**213,319**	**647,982**	**444,324**	**208,117**	**652,441**
Dip.Voc.1	92,968	43,596	136,564	103,301	35,215	138,516	114,600	57,355	171,955	113,706	44,483	158,189
Dip.Voc. 2	116,221	40,431	156,652	112,247	38,699	150,946	121,194	46,281	167,475	129,031	42,147	171,178
Dip.Voc. 3	-	85	85	-	60	60	-	-	-	-	-	-
Total Dip.Voc.	**209,189**	**84,112**	**293,301**	**215,548**	**73,974**	**289,522**	**235,794**	**103,636**	**339,430**	**242,737**	**86,630**	**329,367**
Total	**652,584**	**321,643**	**974,227**	**652,817**	**291,627**	**944,444**	**670,457**	**316,955**	**987,412**	**687,061**	**294,747**	**981,808**

However, the highest branch of the students' attending in 2016 is the industrial branch. There are 247,420 vocational certificate students and 130,413 high vocational education students. The second branch of the students' attending is commerce and tourism industry respectively.

Table 2.4 The Number of Students/University Students Classified by Types of Courses and Education Degrees in 2016

Types of courses	**Cert. Voc.**	**Dip. Voc.**	**High. Dip. Tech**	**Total**
Agriculture	14,447	8,246	193	22,886
Home Economics	14,718	5,988	222	20,928
Information Technology and Communication	3,606	3,642	283	7,531
Fisheries	420	1,084	64	1,568
Commerce	134,947	85,823	1,684	222,454
Fine Arts	11,033	1,815	106	1,2954
Industry	247,420	130,413	4,021	38,1854
Tourism Industry	17,463	5,639	343	23,445
Textile Industry	270	87	-	357
	444,324	242,737	6,916	693,977

However, in 2013 the Office of the vocational education commission has an announcement about policies and rules of admission of students and college students (vocational certificates and vocational diplomas) under the Office of the vocational education commission in 2013 by determining seven ways to increase the number of students (Office of the Vocational Education Commission, 2012a,):

1) Coordinate the establishments to improve labor skills in the establishments in vocational certificates, vocational diplomas and higher diplomas of technology or operation and manage the dual vocational study at all levels for developing the quality of students and promoting working while studying so that students can earn some income.

2) Guide and publicize the education to the students, college students, parents, community and related people by using several ways such as R-Radio Network to achieve a better understanding of educational and career paths.

3) Adjust the period of teaching in schools under the Office of the Vocational Education Commission to accommodate the working people such as teaching on Saturday and Sunday, Remote studying, on-line studying, Saturday-Sunday practicing or overtime on the holidays.

4) Assign vocational certificate and vocational diploma students to the establishments to improve knowledge and professional skills.

5) Supply loans for two purposes: loan committed on future income and student loan.

6) Exempt some students from some subjects by transferring knowledge and professional experience. For example, M. 3 graduates can study in vocational education and those who finish M.6 can study for a vocational diploma.

7) Have educational institutions under the Office of Vocational Education Commission provide the program of open house for students and university students interested in further studying in vocational education. Show the work of students and guide further studying in vocational education.

However, based on the number of students listed above, such practices are not successful as it should. It is still difficult to increase the proportion of students to 60:40 within 15 years with the current strategies of the Office of Vocational Education Commission.

2.2 Vocational Education Management in Foreign Countries

In this section we will discuss the success of the management of vocational education and management of courses in foreign countries such as Germany, United Kingdom, Australia, The United States, Japan, and Lithuania, to understand the skill formation systems which are the analysis in this research. The details are in Chapter 3.

2.2.1 Management of Vocational Education in Germany

Vocational Education of Germany begins at senior high school level. After graduated from high school (Grade 10), aged 15-16 years and it is the end of compulsory education in junior high school level (Full-time), German juveniles will choose to further study in high school level which has two types of curriculum; General and vocational degree. Vocational degree is dual vocational education which

is unique and highly successful and accepted worldwide. Dual vocational education focuses on providing knowledge both theoretical and practical. The schools and institutes are giving at theoretical and the business enterprises are giving at practical. The students in dual vocational education have two statuses at the same time which is the students in the schools and the workers in the establishments. Meanwhile, those who want to attend the dual vocational education will have to apply for Trainee or Apprentice in the industry. The industry who accepts Trainee or Apprentice is qualified at structure, staff, place, and readiness to teach the students by Chamber of Industry and Trade and government agencies. When Trainee or Apprentice is accepted, the industry will contact vocational school to plan together to send Trainee or Apprentice to study theoretical in school by the period of the time. They will attend school classes 1-2 days per week or Block course which is a consecutive studying in several weeks. The course will take three years to accomplish and there will be achievement tests both theoretical and practical. Finally, there will be the final comprehensive examination for graduation of technical certificate to be Journeyman from the Chamber of Industry and Trade (Parichat Jantori, 2012, p. 35).

Due to the study above, companies have spent a lot of money each year to train workers in factory-school (duals system). Some companies have their own vocational training schools and provide continuous study to their workers. It is not a short term training or forced by the government but the factory-school system (duals system) idea is derived from private parties. Vocational group in each vocational branch has always invested in developing its own workforce. This training has made traditions and regulations which turned into the dominant symbol of vocational training in Germany's society. It is difficult enough for people in other societies to understand and follow the way of how the Germans did, especially how the private sector got a role in the society to build quality workforce through training procedure and achieve maximum efficiency, not just take advantages from the vocational institutes. (Luechai Kaewsook, 2011, p. 80).

Although duals system is deeply rooted in German society, it is the training system that has been approved by the law, especially the training in the establishment followed in the law of federal government (federal) which all states must follow. However, theoretical study in the vocational school followed in the law of education

of each state which will be different in details. The duals system training takes 3-3 year to accomplish depending on each branch, so graduates are more than 18 years old which pass compulsory education and can work in the establishment regularly. Most of the graduates of moderate high school will further study in vocational education college which is Full Time Vocational Schools or Upper Secondary Vocational Schools, also known as German. "Fachoberschule" (FO) to earn a living or further study in higher education. However, some of the juveniles who graduated from the moderate high school may return to duals system. The graduates from junior high school of general will further study in Upper Secondary Schools for three years (grade 11-13). The learning takes 13 years before completing senior high school education of general which is different from other countries. Other countries will take 12 years to finish the level and get a diploma called "Abitur" to prepare for admission to university. Besides, those who have completed senior high school level of general section may get back into duals system as well as junior high school graduates of general section (Banleng Sornnin, 2005, p. 59).

Federal Republic of Germany is the origin of vocational education curriculum and Dual Vocational Training: DVT and spread to different countries. Thailand has brought duals system of the Federal Republic of Germany to use and tried to use the system at ThaLaungCementThaiAnusorn Technical College Saraburi Province in 2527 by getting help from the Federal Republic of Germany. The program is cancelled later, but a decade after it becomes an interest again as will be discussed further in Chapter 5.

2.2.2 Management of Vocational Education in England

Management of Vocational Education in England has been prepared for students since the age of 14 years. Start from the basic knowledge of technology and the world of work by providing the curriculum to enhance skills of science, technology and language in line with the global workforce. Create working experience and operate high broad curriculum according to the project in the City College of Technology. Provide vocational training seriously into the system of compulsory education to those aged 16 years or up which is organized into flexible, so students have several options. The management of vocational education in England

is in Control of the Ministry of Education. When students graduate high school education, they may choose to study in technical college or choose to train in the project of youth vocational training or choose to train in the establishment by using the establishment's capitol. The management of vocation with the cooperation of public sector and government sector of the United Kingdom is called Sandwich System. Junior high school graduates enter the system as Trainee, so they have more education. Trainee will have certificate equivalent to vocational certificate of Thailand. Students may come to the evening classes one to two days a week, mainly to study full-time, but if some study Part time called Block Release Course. Students aged 14 higher will receive the basic knowledge of technology and the world of work. Schools provide courses to improve students' skills in science, technology and languages consistent world of labor such as Technical and Vocational Education Initiative, Work Experiences or City Technology College.

The vocational education begins after completing compulsory education. For those over the age of 16 years who do not wish to study in the university but wish to have vocational certificate, the schools have opened the different types of curriculum (Banleng Sornnin, 2005, p. 66) as follows:

1) First Certificate/Diploma (FC/FD) is for students who have just graduated from school and have passed a few GCSE subjects. This course takes one year, then students can continue their studies at a high level.

2) National Certificate/Diploma (NC/ND) is the vocational education higher from the FC/FD. During the two-year course, the first year is learning the FC/FD which is equivalent to GCE "A" Level. If students get good grades, they can study bachelor's degree level.

3) Higher National Certificate/Diploma (HNC/HND) is the highest level of education. The Duration is two years. The students who graduate from this level if wish to study in bachelor's degree they could by studying another two years, but they must have good grades. Certificate of this curriculum will be obtained from BTEC (Business and Technician Education Council) and Scotland will get the qualification of SCOTVEC (Scottish Vocational Education Council) etc.

The general purpose of this is a close cooperation between schools and enterprises, especially in a coalition of professional standards, courses and

professional qualifications, data exchange, education programs and training by needs of the three organizations; national training organizations, trade unions and the establishment of training. The two main organizations control the quality of the workforce. Bureau of courses and qualifications and Financial and continuing education institutions have a legal duty to assess and report on the quality of education, that is to employ external auditors to check every four year by summarize the control system of quality standard. Vocation and vocational training consists of vocational certificate by paying attention to the establishment's demands and by having Bureau of courses and qualifications to check according to the criteria. Independent organizations of the employer or group of vocation assess individuals to give the professional certification and inspection systems of external quality education system by encouraging self-assessment (by the Commission. National Education, 2543 (3) - (5)).

2.2.3 Management of Vocational Education in Australia

Management of education in Australia consists of three main organizations; public sector, private sector and the business group. The public sector supports the technical education of the beginning level the advanced level. The private sector supports institutions of vocational training and the business group supports vocational training in the industry. In Australia's education system, each state will create its own system. There is no organization to take care of the education of the country. The education is divided into primary school for the children not over 12 years old and a high school for children not over 17 years old. Most children are learning in Coeducation schools the government provided without fee. After finishing junior high school, students can further study in the vocational and technical colleges. Nowadays Australia has vocational registration organizations of more than 4000 institutions, 80 of these institutions are Technical and Further Education (TAFE) and other public institutions, the rest is Vocational Institute organized by the private sector. The system of vocational education and training is resulting from the cooperation of the federal government of Australia, government of the state, eight administrative districts, representatives from industry sectors, training institutions under public and private sector. They are set to work together to manage vocational training for Australian citizens who have an interest in it nationwide. The employer would be the group to

decide which policy of training and development of training standards to take, and the policy must support the skills that employers need. National Centre for Vocational Education Research (NCVER) owned by federal government, state government and regional government is responsible for training, management, analysis, evaluation, research and statistics of vocational education on this system (Institute for Vocational Education and Job Training Australia, searched for information online on October 30, 2016). Besides, the technical colleges and continuing education (TAFE) can arrange short term courses according to the agency's demands. Provide education for adults in the fast ordinary course called Matriculation which is a one year course for adults over 18 years old who did not finish high school and want to have such a qualification to study higher education because education is the responsibility of the Ministry of Education, having job, education, training and DEETYA (Banleng Sornnin, 2005, p. 50).

The Vocational Education Department is responsible for vocational education and vocational training. The authority has two important missions: 1) to develop workforce to have skills and high proficiency in accordance with demands of the industry and 2) to develop national education system and training under the supervising of an independent organization called "ANTA". (Australian National Training Authority) which is an organization of coordinating education policy and training between governments to have unity. Australian National Training Authority (ANTA) has duties as follows:

1) Preparation and development of national strategies.
2) Develop service Promote National Training.
3) Make recommendations of budget, financial and planning.
4) Presentation of modern statistical data and preparation of the annual report.
5) Review the policy Coordinate for the creative Research and evaluation.
6) Management of national projects.

Education with distinctive characteristics, disruptive to the routine method is another Open Learning Australia: OLA. It is the post-secondary education to all of the people in Australia which is really developed from the Distance Education to open the education for all citizens, according to time, place and method you prefer. The costs are very low and very flexible. The innovative use of this service is much higher

in the management of education according to the cooperation like a partner institution, especially technical colleges and continuing education. (TAFE) and conducted in such a commission. For the expansion of educational programs and training providing to the state and the labor market, students can learn by regular or distance learning through Educational Innovation. Students can study at any time and on a voluntary basis, suitable for any individuals (Banleng Sornnin, 2005, p. 51). In addition, there has been a written of The Australian Blueprint for Career Development or The Blueprint by aiming to create Career Development program to help people to manage the operations and the training and result in the efficiency of all operations in the country. This program is in the form of a combination of education and professional development in each range of the work by Canadian Blueprint for Life/Work Designs. Workers can see the frame on professional development. A clear picture on development to advance. The future is important to increase flexibility. This depends on the purpose of each of other (Office of the Secretariat of the Education Council, 2010, p. 103).

2.2.4 Management of Vocational Education of the United States

The United States has no national education system because each state has its own capital and minister of education of the state, so the management of the study is the duty of each State. The Ministry of Education does not have the authority to organize national education, but act only in coordination with other states. Each state has the State Board of Education and the Ministry of Education to service. Commissioner in each state serves the general administration of the State in his area. However, each state has tens of education zone governed by county council or county board of education, called the "School Board". Officials with the district administration in each state are different. Some states also have the power to rally. Some states have distributed Power into the decision. The obligations of the education of the management of the National Vocational Education are preparing to absorb young people for Career Education since kindergarten to high school. There is vocational education at the high school in a community college and technical college before entering professional work or study for a degree. In 1990 the federal government passed a law called Carl D. Perkins Vocational and Applied Technical

Education Act which is the law that supports the concept of vocational preparation techniques. (Technical Preparation: Tech Prep). Tech Prep. is organized into three level; 4 + 2, 3 + 2 and 2 + 2. Vocational subjects should be opened for the young people who are not directly geared towards the general higher education to have the opportunity to choose to study profession subjects since nine years (M.3) and continue until the community college level or technical college level. This pattern is 4 + 2 (9-12 years + 2 = 4 years in the community university), or to start vocational classes at 10 years or 11 years continuing to community college or technical college will be of the form of 3 + 2, and 2 + 2 respectively. Technical Preparation System has been spread quickly all over the state from 1990 until now because it is the career preparation to the high school youth. Career Preparation focuses on the depth of the skills or specific skills in community colleges (higher education) which causes the youth of technical preparation section to have basic knowledge, maturity and high skilled knowledge of profession competed to the advancement of technology. The system of vocational education management called Apprenticeship is the system that some of the high school graduates have an interest in. They have to apply to be Trainee in an establishment that has been registered by the state, and cooperated with vocational education institutes (Community College Technical College). The youth will be trained full time in the establishment and study the principles of theory in vocational education institutes for 2-3 years until finish the course and enter the career. (Office of the Education Council, 2001, p. 6).

2.2.5 Vocational Education in Japan

Vocational Education in Japan starts at high school for the students who choose to study vocational courses, or a mix of high school courses. There are several vocational subjects such as agriculture, industry, commerce, fisheries, home economics and hospital and arranged for formal time, non-formal time and distance education. Elementary colleges are providing the vocational education curriculum for high school graduates. It takes about 2-3 years to finish this curriculum. Meanwhile, technical colleges will admit junior high school graduates. It takes five years to finish the curriculum. For specific vocational education, the country provides specific vocational training colleges for high school graduates or higher. Besides, there is short

term and long term vocational education training according to students' interest. (Banleng Sornnin, 2005, pp. 79-80). In addition to this, Japan also has the Ministry of Labor to operate the vocational education training to labors as follows:

1) The basic training is the knowledge and skilled training required for the creation of jobs.

2) Training higher skilled technicians to enhance skills to have the capability to work.

3) Training to enhance the potential for knowledge and necessary skills for work.

4) Training for the unemployed or those looking to change careers. These workshops held in the vocational training center, skill development center and vocational training enterprises. The private sectors or the enterprises in Japan focus on education and training for the staff from the beginning of working entry to the rest of this entry. The large establishment has its own vocational education center. Medium and small establishments will use the skill training center and technical colleges to train the staff. The course is organized in collaboration with the foremost establishments. The training in the establishment has both of the purposes, to build and gain specific skills for an operation and to train to change or get promoted such as the training for new employees, executive managers, middle managers and top managers. In summary, the Vocational Education in Japan begins in high school which can be technical college or specific school. Some colleges are allowed to manage the education to bachelor's degree level including short-term and long-term courses. The high school graduates may enroll in vocational colleges which is the specialized education. In addition, Department of Labor arranges the preparation course for new employees and the advancement course. The private sectors arrange vocational training for their staff as well.

2.2.6 Vocational Education in Korea

The Republic of South Korea pays a lot of attention to vocational education. The basic vocational education as an elective subject begins at junior high school and in senior high school and post-high school. The senior high school students who choose to study vocational education in the school will be educated in various career

fields. It is the joint study between schools and enterprises in Dual System or Two-Plus-One Program. It is a vocational education study in senior high school for two years, and experience training in the establishment for a year. For post-high school, there are elementary vocational education colleges which have purposes to produce workforce to have knowledge of theory and practical skills.

There is the promotion of the cooperation between elementary vocational education college and the establishment to produce skilled labors to conform the various demands of the industrial sectors such as training program, industrial training in elementary colleges, the study of employees in the industrial sector in elementary college etc.

Development of Vocational Education of the Republic of Korea is focused on the system of vocational education for life to develop a society of lifelong learning and for the students to develop their talents and potential and create believe in yourself. The vocational students can study up to the PhD. level and they are allowed to enroll in various courses part-time in college and to have a test to accumulate study units. Generally a course of vocational schools, 40-60 percent is general courses the rest will be vocational subjects. Besides, there are specific schools such as Art Schools, Physical Education Schools and Language Schools. The goal of these schools is to provide appropriate education to the students with a unique ability in specific field. (Office of the Secretariat of the Education Council, 2010, p. 114)

Vocational training is a non-formal education organized by the public and private (Banleng Sornnin, 2005, pp. 86-87) as follows:

1) Professional training in public institutions conducted by the Office of Labor called Korea Manpower Agency (KOMA) is the foremost training to develop semi-skilled workforce and skilled workforce in the field of industrial production aimed at export and modern technology. The training takes three months to two years including the training to prisoners and disadvantaged people in the field of carpenters, bricklayers and welders.

2) The foremost professional training in private enterprises is the training by the demands of the enterprises. The establishment organizes its own independent program or cooperates with other enterprises in a joint training or lets other units organize in the name of the establishment.

3) The foremost vocational training of the assigned agency is the vocational training of the professional agency by the demands of the public sector or the private sector. The curricula are Cooking, Hair Styling and Data Processing.

In addition, the Republic of Korea has the system test, National Technical Qualification System to monitor the standard of vocational education and training. The system is under KOMA. KOMA is responsible for testing the efficacy to professional group of engineers and craftsman. The Korea Chamber of Commerce and Industry is responsible for testing competent profession of professional services by rating to five competencies; professional engineer, chief workforce, engineer, industrial engineer and skilled labor.

2.2.7 Vocational Education in Singapore

Republic of Singapore pays a lot of attention to the education. The country believes that the effective education system is important for the development of population and country. One-fourth of the country's budget is spent for the development of the education. The Education of the Republic Singapore is based on flexibility and organized in accordance with interests, abilities and aptitude of the students to develop the full potential of each individual and meets the need in developing the country. Therefore, Singapore has defined that all children must be in school for 10 years, primary education for six years and four years of secondary education. The post-secondary education has the pre-university education, technical and vocational education and university education. For the management of the National Vocational Training, students who want to attend the vocational school will be able to begin at high school. Students will study in a regular course in vocational section or choose to study in general section in secondary education, but switch to a career in post-secondary education in polytechnics or Technical Institute.

There are two types of vocational education in Singapore; polytechnic institutions and ITE (Banleng Sornnin, 2005, p. 95).

1) Polytechnic College

The education is to produce the middle level workforce by accepting high school graduates, National Technical Certificate NTC-2 or graduates in the training curriculum from ITE. To manage the course, the practice focuses on the

needs of the industry. Polytechnic colleges open courses such as Administration, Engineering, Technology, Navigation, Mass Marketing and Computer. In addition, there is a short-term course for developing career as well.

2) Institute of Technical Education: ITE established in 1992 for education and foremost technical training and vocational education for high school graduates for preparing for a job. Moreover, the work may also provide training to the employed to develop skills. Nowadays ITE has 11 institutes linked with the computer system. Students who want to study at ITE must at least pass GCE "N" Level test in the secondary level. ITE has organized two types of study; full-time study at ITE center and training as Trainee.

In addition, ITE also plays an important role in changing the attitude of people towards vocational education. Before the establishment of ITE at the beginning of industrialization, the public value of education had been the obstacle of the vocational education development because parents in the society expected their children to study in the university to have the degree that the society accepted.

The government has tried dramatically to change the image of vocational education in Singapore, whether to campaign the importance of vocational workers, insert skill subject in the compulsory education curriculum or even advertise, however, the project was unable to cause the changes in society as a whole. ITE has been established to work in a mixture of marketing, communications and Branding to change the image of vocational education. An important factor is the establishment of the contemporary colleges which is the key to the success of the development of ITE in Singapore (Office of the Education Council, 2016, p. 208).

For the quality standard of vocational education, Singapore has arranged three professional skill levels, and National Technical Certificate or NTC is given by the Institute of Technical Education (Banleng Sornnin, 2005, pp. 96-97) as follows:

1) NTC-1 is the highest level. The students who pass the exam will have the knowledge and technical skills in the professional field which comparable to Master Mechanics.

2) NTC-2 is the technical expert level. The students will get this certificate by two years of full time vocational training or Apprentice graduates.

3) NTC-3 is the technician assistant level. The students have to pass a full time basic training for one year or pass an Apprentice training in the basic skill curriculum

In addition to this, there is a series of supplement diploma.

1) Modular Certificate of the NTC System is the certificate for one of the module trainings of NTC curriculum for allocating to pass NTC at basic level.

2) Certificate of Competency (CoC) for the occupation cannot be organized into NTC because of narrow and specific professional skills or own skills accomplished.

3) Industrial Technician Certificate (ITC) for technical workers that had been trained before or a chief worker. The training takes two years full time and non-formal time 3 years.

In addition, the private sector and the establishment of Singapore's roles are to build cooperation and develop the capacity of vocational training in the foremost centers.

In conclusion, the factors to achieve at the management of vocational education in foreign countries beside the clearness and the continuation of the government policy are the cooperation of the management of vocational education between schools and establishments for improving students' vocational education experience to meet labor market demands as in the case of Germany and Singapore. In the case of Germany, vocational education begins at senior high school level mostly duals system. Although there are vocational education in some regular schools, it is so a few of them. However, the most important subject is there is the career path for vocational education graduates until Meister in any specific career. On the other hand, in Singapore vocational education begins at high school level and especially after high school in Polytechnic colleges and the institute of ITE which is widely accepted by the establishments. However, in Singapore, Japan, Australia, Germany and The United States of America if the vocational education graduates wish to continue education in bachelor's degree, they must have good grades. Therefore, Most of the vocational graduates entering labor market are qualified and enough to meet the industrial sector demands.

2.3 Vocational Education Management Problems and Workforce Demand

The continuing economic growth of Thailand today is resulted from the growth and the development of the industrial sector that has used labor intensely. It reflected the importance of the administration of vocational education system as an education system that emphasizes on producing labor to the production sector and the industrial sector which is the important condition to enhance the competency in the competition of the country, especially in globalization of high competition. However, nowadays Thailand has encountered the shortage of skilled labors that have the potential in vocational education level severely and likely to have suffered more. The survey findings of World Bank specified that when compared with other ASEAN countries, Thailand has the severe problems of the shortage of qualified and skilled workforce or labor in the production sector three times more than other ASEAN countries. One in three bachelor's degree graduate in Thailand does not have a job after graduating or works in other fields, not the field that they graduated from. It has predicted that in 2016 when Thailand has become part of AEC, Thailand labor market will be in trouble both head and tail. Head is Thailand may have to hire the intellects from other countries to help at science, technology and engineering for that it can't produce enough personnels of the previous fields to meet the demand. Tail is Thailand has to rely on migrant workers (Naewna, 2012)

From the results of the study of workforce demand in the industrial group by the Office of the Education Council found that the industrial groups rather lack moderate workforce or practical workforce especially vocational education graduates and vocational diploma graduates. More than 75% of the graduates at this level will further study at bachelor's degree. Moreover, new graduates cannot be able to work efficiently. The establishments have to train new graduates at least 3-6 months which causes the expense and wastes their time. According to the research project about the development plan of workforce in Thailand to enhance the competency in the competition of the country by TDRI, the government has focused on the unlimited support of education in general section and neglected vocational education which caused the decrease in vocational education students. In the report of the research of the estimated number of graduates entering labor market between 2007-2016 found

that every year the number of labor from all levels of education will enter in the labor market more. Bachelor's degree labors are entering labor market the most. If considering at the quantity of the labor market demand especially in the industrial sector, the proportion of labor market demand of vocational education level is more than bachelor's degree level. When considering the number of extra labor demand of labor market in the industrial sector in 2007-2011, labor market needs more of the labors of vocational certificate and vocational diploma to 23,255 persons while of bachelor's degree to 21,797 persons. Besides, in five years later (2012-2016) labor market needs more of the vocational certificate and vocational diploma labors to 26,213 person, but it needs bachelor's degree only 17,245 persons (Kriengsak Chareonwongsak, 1981)

The Office of the Education Council (2009a) has studied and analyzed the tendency of the situation about vocational education and workforce demand of the industrial sector today as follows:

1) The industrial sector needs a great number of capable workforces in vocational diploma level.

2) The shortage of qualified workforce in moderate level in the industrial sector especially industrial technicians to build machines and parts

3) The qualifications of most of the graduates do not meet the industrial sector demands.

4) The vocational certificate and vocational diploma graduates tend to further study in higher diploma of technology instead of earning a living.

5) Opening The Curriculum of Vocational Certificate in high schools does not accomplish effectively and effects the administration and management of regular curriculum in vocational education schools that is the educational source in the management of that vocational education curriculum.

6) There is a student loan for study for students without good measures such as the loan for further study that does not meet the field which causes problems and other bad consequences.

7) There are no attractions for vocational diploma graduates to find the job such as the advancement of the job.

8) The management of vocational education to produce personnels entering the business does not have zoning both the division by types of the profession and geography.

9) Participation of the establishments in the management of vocational education especially the management of training in the establishments is limited.

10) There is no vocational capacity standard test at any level for graduates to be the tool to approve the capacity.

11) The law of vocational education specified in National Education Act is used for a long time isn't applicable.

12) Contract teachers in vocational schools lack collateral in working in any issues such as package rates, position, benefits, advancement and stability

13) Most of the teachers teaching in industrial vocational schools lack real experience in the industrial sector.

14) The path of the professional advancement of the administrative is limited.

15) Most of the schools lack tools, machines, modern equipments and instructional media to use in managing the study. The trend of the social value of having bachelor's degree is increasing.

Recently the report of the labor demand survey in the establishment between 2011-2015 by Department of Employment, Ministry of Labor (2016) comparing data in 2014 and 2015 found that in 2015 the enterprises need labor in the vocational certificate and vocational diploma/diploma the most, about 37.78%. Next, they need secondary education, 31.63%, elementary education and lower, 16.88%, and bachelor and higher, 13.71%. In 2014, the enterprises need the total of all education levels of labors, except bachelor and higher which drop out of 12.69%. When considering the career, in 2015 the enterprises need labour in general occupations the most which is 155,893 persons or 32.70%. Next, they need 88,323 positions of page and salesman or 18.53%, 76,014 clerk or 15.94% and 56,385 technician which increases almost 7,000 person comparing to 2014 as shown in the figure 2.2-2.3.

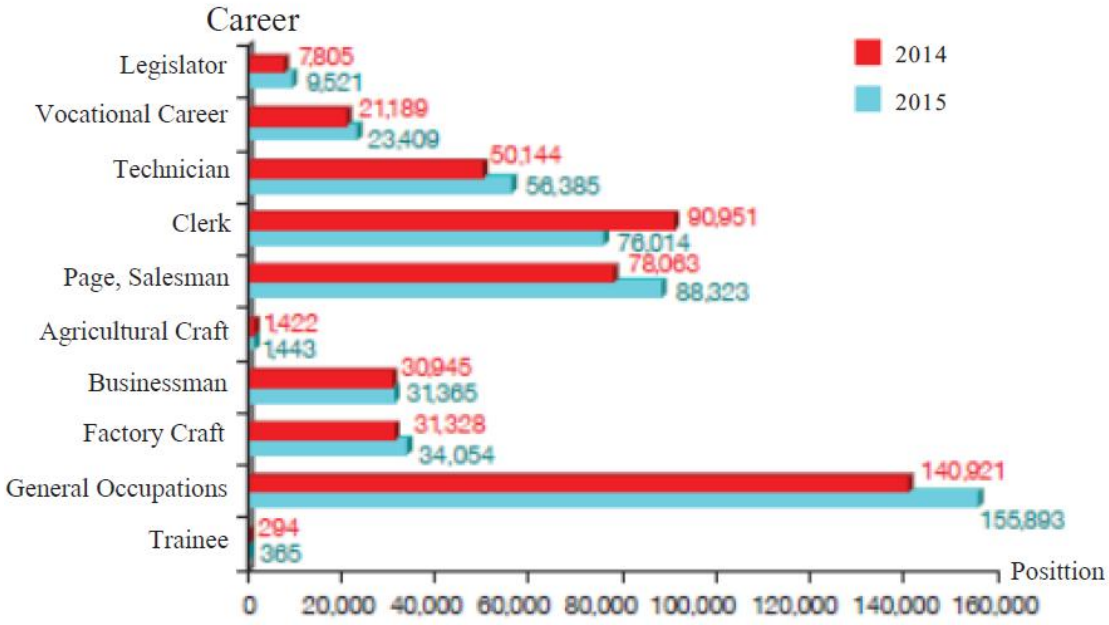

Figure 2.2 Labor Demand 2014-2015 Classified by Career

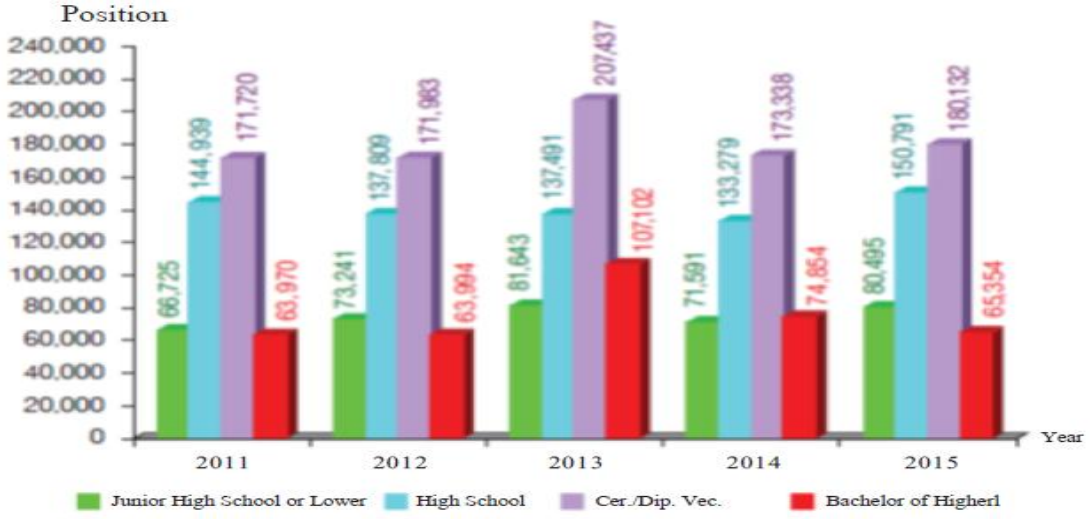

Figure 2.3 Labor Demand 2013 Classified by Educational Background

However, the establishments have to manage the additional training at least 3-6 months, so they will have more expenses and it affected their employment demand (although they lack a lot of labors). Moderate labors do not want to enter labor market because they have the educational value that a person should accomplish bachelor's degree to find a good job, but in fact it isn't true and it is against that value. Actually, labor market needs vocational certificate graduates more than bachelor's degree graduates because vocational certificate graduates are more hard-working and tolerable than bachelor's degree graduates, also they have more skills of working (Naewna, 2012).

In this subject, Yongyuth Chalamwong, the director of the research of the development of labor, TDRI said, "when considering manufacturing base, having bachelor's degree is good but not in all fields because the certificate may not meet labor market demands, for example, in social section like Arts, Humanities, Science of Education, and Mass Communications once labor market needed, but later it has its peak of the labor market. Thailand is a small country. Thai people cannot be the experts at any field. When the market does not expand, the opportunity of advancing in the career is limited too" (Daily News, 2011b)

Meanwhile, when considering the policy of wage raising which is the most important policy of Yingluck Shinnawatra's government, Yingluck told the parliament, "there has been an operation of wage for labor to live with pride and a good life, not less than 300 Baht per day. bachelor's degree graduates have an income not less than 15,000 Baht per month in accordance with their productivity and efficiency. Also, there are the measures to reduce expenses for the entrepreneur who affected from the situation". Nevertheless, Yingluck's policy may worsen the situation of the shortage of labor in Thailand. Although the raising of the wage policy for bachelor's degree graduates isn't forced by the law and is a burden for the private sector, the public sector has to follow the policy. This point may induce vocational education students to further study in bachelor's degree more, instead of entering the labor market. Another issue that reflects the conflict of the policy in planning workforce of the country is that schools of general section increase the admission of the students who graduated Matthayom 3 to further study in senior high school due to the subsidy in the management of the basic education. Therefore, every school

accelerates to increase the number of the students to have that subsidy, and that lessens the number of applicants entering the vocational education. We will discuss the details of this issue in Chapter 6. Moreover, from the report of the Office of the Education Council found that the value of having the bachelor's degree lessens the number of the students in vocational education. Despite the necessary of the moderate labor to drive the economic growth of the country, the number of students entering the vocational education tends to decrease dramatically and continuously as in the table 2.5 (Office of the Education Council, 2010, p. 182).

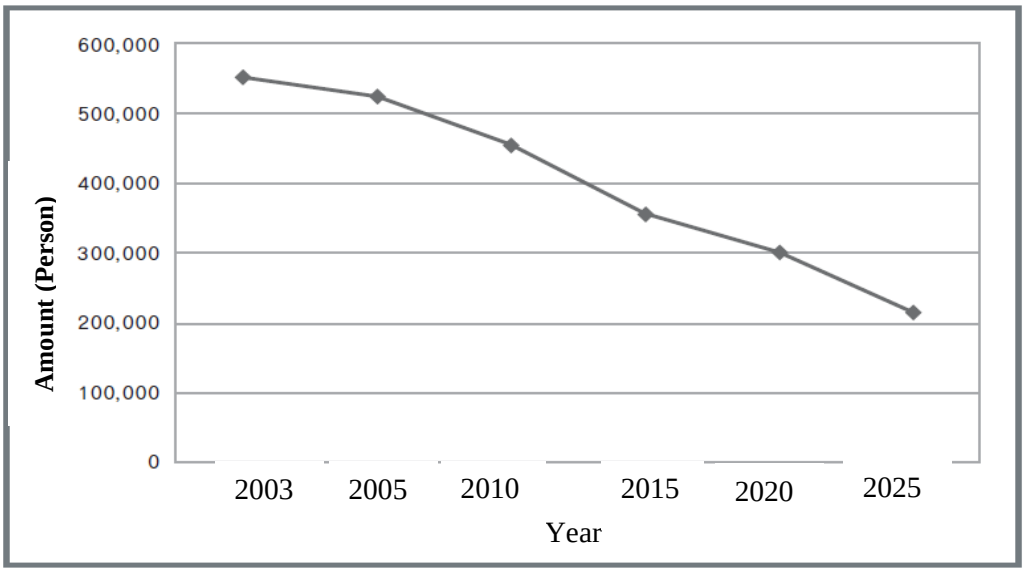

Figure 2.4 Rates and Tendency of the Number of the Students in Vocational Education 2003-2025

Source: Office of the Education Council, 2010, p. 184.

The Analysis in the dimension of Demand Side and the dimension of Supply Side (Office of the Education Council, 2012, pp. 27-28) are as follows:

1) The production of the workforce mostly isn't based on Demand Driven. The institutes and schools choosing to produce workforce by Supply Driven cause unemployment and the shortage of workforce.

2) The result of the study of Skill Shortage in 2008 found that the most Skill Shortage is the general labor/the production labor, 23.55%. The career section shortage mostly is in production section and service.

3) The structure of labor market is “Skip”. Labor at junior high school or lower is the highest and senior high school is the second. The center is Skip to the basement. Vocational certificate and vocational diploma are the least. Next to the basement is bachelor’s degree and Master’s degree.

4) Students who have a degree of vocational education and vocational diploma approximately 75% will further study in bachelor’s degree because of a higher salary and only 25% will enter labor market, so it causes the severe moderate Skill Shortage.

5) Some of the students in vocational education such as vocational certificate and vocational diploma who further study in bachelor’s degree still have to apply a job by using only vocational certificate or vocational diploma because some establishments do not want workers with bachelor’s degree because they have to pay more. Besides, students who graduated bachelor’s degree have to take short-term course of profession in the establishments.

6) Schools in general section increase the admission of students graduated M.3 because of the subsidy provided in managing the basic education in the schools. This is the main reason why every school in general section has to accelerate to increase the number of the students because it wants the subsidy which causes a decrease in vocational students.

7) When analyzing the production of labor in an area, vocational certificate graduates, vocational diploma graduates and university graduates (bachelor’s degree and Master’s degree) are more than demand in an area. Therefore, it does not correspond to the production. The over-production has to find job out of an area. There are some provinces that have demand more than supply.

8) High school graduates or lower are needed more than vocational certificate and vocational diploma or higher. Vocational certificate and vocational diploma or higher are a few needed in a province, especially the province with the low development. However, many provinces still lack Skill Shortage higher than bachelor’s degree.

9) Not in accordance with the quantity. The production of vocational education workforce does not meet labor market demands. For the inconsistent quality problems, vocational graduates lack Core Competencies and Functional

Competencies. Besides, all groups of labor have GAP between computer skill, language skills and critical thinking skills

10) The quality of some vocational courses was not accepted by the establishment because vocational education does not study educational needs of enterprises, lack availability in terms of equipment, facilities, and limitations of subsidies received.

11) The quantity and quality of vocational teacher is not consistent with the mission which affected the quality of students. Therefore, they are impossible to develop knowledge skills and attributes that are essential to the performance of graduates of vocational education.

12) The image of violent controversy in some groups of students in vocational schools affects attitudes and acceptance of parents and society.

2.4 Workforce Demand Trends and Free Flow of Labor After the AEC

The Department of Labor reported the estimated workforce demands in the next five years. The overall assessment of Labor demand estimates using econometric models between the years 2016 -2025 found that from the base year in 2016, Thailand will employ a total of 37.83 million people and increased to 38.79 million a year in 2020 and 39.34 million in 2025 which can separate the demand for labor in an industry with great potential into the industry group (Thansettakij, 2016).

1) The logistics industry in five years is estimated to have demand for workers in this industry for 6.62 million people. It has to increase the labor production in 2560-2564 to accommodate the needs of Logistics industry totally for 171,185 people, divided into 151,959 workers, 8,187 technical staffs and 6,475 managers. The workers have the highest average increase of 89.65 percent, technicians with 4.83 percent and 3.82 percent for the manager position.

2) The automotive industry is divided into the automotive industry and the automotive manufacturer. The forecast for the labor demands in the next five years is a total of 16,037 people divided into M.3 or lower level for 5,463 people, vocational certificate/ vocational diploma for 7,562 people and bachelor's degree for 3,012 people. The supplementary demands for labor in the first three priorities are

Operator, Technician, and Supervisor which graduated at vocational certificate/ vocational diploma, and M.3 or lower.

While in the automotive industry, Tier 1 forecast a total of 49,686 people in the labor demands in five years divided into M. 3-lower for 17,726 people, vocational certificate/ High vocational certificate for 14,488 people and bachelor's degree for 14,937 people. The highest average of the position increase in the supplementary demand was M.3-lower in the position of Operator and Team Leader for 40.8 percent, followed by vocational certificate/ vocational diploma in the position of mechanical engineer for 29.2 percent and bachelor's degree in Engineering in the position of mechanical/electrical/electronics/mechatronics for 23.1 per.

Meanwhile, from the open of the ASEAN Economic Community, The free flow of labor in seven professional fields are engineering services, architectural services, nursing services, medical practitioners, dental practitioners and surveying qualifications and accountancy services. Tourism is in the process of negotiating to make an agreement. Although Economic and Social Issue 11 (year 2555-2559) has set a strategy to support free flow of labor by making Thai Qualifications Framework by creating a link between educational qualifications and professional qualifications in accordance with workforce demand comparable to international standards for the workforce to have capacity and progress in the career. Theory of learning to creative intelligence, the motivation values of learning and self-employed professionals and the uplifting standard courses provide students with competencies in occupations associated with industrial goals, and in accordance with the expertise of educational institutions, including the general purpose network development and manufacturing labor force with various sectors, particularly the establishment, specialized institutions coupled with a network of international learning (National Economic and Social Development Board, 2013b, p. 7). In practical, there is still the shortage of concrete measures.

As it can be seen in the report "Education to prepare the production and development capacity for people and to support labor mobility runoff treatment under the ASEAN Economic Community "(2012) by the Office of Education Council which concluded the impact of free labor mobility under AEC framework that Thailand's education compared to other countries in the region is in the forefront. The quality of

education in Thailand found that seven professions are in the front row compared with other countries in the region. However, Thailand has several disadvantages such as the policy of the state. The law on labor mobility is still unclear in strategic workforce mobility. Thailand remains focused on reactively rather than proactively. Thailand's education system continues to cause major problems in Thailand because of the value of Thai people.

The interview coincides with the Professional Association of Engineering representative indicated that, although the engineering system studies of Thailand is still in an early sequence when compared to other countries in the region; the technical college has been reformed and elevated to Rajamangala University of Technology. The teaching of engineering disciplines grows at enabling people to do more study on this subject. When students in vocational certificate/vocational diploma further study more in the university, this resulted in a labor shortage of technicians in Thailand (Office of the Education Council, 2012, pp. 256, 252), especially middle-class workers in the industrial sector which are highly in need of the country. Meanwhile, the open of ASEAN Economic Community not only will affect the structure of the production of the ASEAN countries and Thailand, but also affect the movement of factors of production. In fact, both skilled and unskilled labors may worsen the problem if lack of preparedness of labor to support the impact.

Table 2.5 Percentage of Professionals withthe Liberalization of the ASEAN Economic Community

Education Level / Career	Vocational Education			Bachelor's Degree			Higher than Bachelor's Degree			Others			Total		
	2005	2007	2009	2005	2007	2009	2005	2007	2009	2005	2007	2009	2005	2007	2009
Doctor	0	0	22	21871	4359	10937	8907	1684	3590	276	0	0	31054	6043	14549
Dentist	0	0	0	5,112	3,179	5,056	1,224	283	1,340	72	23	0	6,408	3,485	6,396
Nurse	11,049	4,022	5,019	99,576	43,719	95,609	79,51	2,268	7,065	348	109	254	118,924	50,118	107,947
Accountant	941	1,128	1,442	32,224	13,841	32,481	9,247	4,102	10,268	734	385	57	43,146	19,456	44,248
Architect	23	412	62	8,749	3,790	12,194	1,119	667	959	144	198	276	10,035	5,067	13,491
Engineer	1,429	120	1,702	60,101	23,110	57,942	9,939	4,486	12,763	550	99	889	72,019	27,815	73,296
Explorer	3,590	1,645	1,797	3,055	1,842	2,806	83	311	49	1,162	0	592	7,890	3,798	5,244
Distribution															
Doctor	0.00	0.00	0.15	70.43	72.13	75.17	28.68	27.87	24.68	0.89	0.00	0.00	100	100	100
Dentist	0.00	0.00	0.00	79.78	91.22	79.05	19.10	8.12	20.95	1.12	0.66	0.00	100	100	100
Nurse	9.29	8.03	4.65	83.73	87.23	88.57	6.69	4.53	6.54	0.29	0.22	0.24	100	100	100
Accountant	2.18	5.80	3.26	74.69	71.14	73.41	21.43	21.08	23.21	1.70	1.98	0.13	100	100	100
Architect	0.23	8.13	0.46	87.18	74.80	90.39	11.15	13.16	7.11	1.43	3.91	2.05	100	100	100
Engineer	1.98	0.43	2.32	83.45	83.08	79.05	13.80	16.13	17.41	0.76	0.36	1.21	100	100	100
Explorer	45.50	43.31	34.27	38.72	48.50	53.51	1.05	8.19	0.93	14.73	0.00	11.29	100	100	100

Source: Office of the Vocational Education Council, 2012a, p. 16.

The proportion of professionals that are open after AEC found that vocational engineering professionals are relatively low compared to the bachelor's degree and higher. It might have been a result of the liberalization of little labor mobility. All of this will be studied further in this analysis.

If considered in terms of opportunities for cooperation and investment in education, production and development of the middle class of skilled labor, Thailand may be an opportunity for ASEAN Economic Community. The study is the proportion of general and vocational education of the ASEAN countries that all countries have a higher proportion of general learners. In Thailand the proportion of students in general section to vocational education is 60:40 while other countries have a lot more proportion than Thailand such as Brunei (84:16), Malaysia (85:15), Singapore (84:16) and Vietnam (86:14) except Indonesia, which is near the proportion of Thailand 62:38.

The CLMV countries Cambodia, Laos, Myanmar and Vietnam found that there was shortage of vocational education labor which is the key workforce to increase production, and infrastructure development. Therefore, at this point, it may be the chance of the country in cooperation with these countries in the development of vocational education. When considering the development of the management of vocational education in Thailand which began operating in 1910, it is more modern and progressive than many other Asian countries.

Table 2.6 The Proportion of Students in General Section and Vocational Education in ASEAN Countries 2007-2009

Country	**General**			**Vocational Education**		
	2007	**2008**	**2009**	**2007**	**2008**	**2009**
Brunei	19,266	19,075	20,057	3,230	3,481	3,689
Cambodia	224,962	264,583	305,197	18,920	-	-
Indonesia	4,811,810	4,614,446	4,995,119	2,401,732	2,738,962	3,095,704
Laos	151,506	154,785	-	3,422	1,685	-
Malaysia	867,521	883,873	-	157,742	161,044	-
Myanmar	638,401	693,515	681,856	-	-	-

Table 2.6 (Continued)

Country	General			Vocational Education		
	2007	**2008**	**2009**	**2007**	**2008**	**2009**
Philippines	1,357,889	1,253,642	-	-	-	-
Singapore	106,840	107,264	108,421	13,648	13,306	13,607
Thailand	1,150,012	1,169,399	1,208,275	767,304	776,531	766,718
Vietnam	3,111,280	3,070,023	2,951,889	515,670	614,500	-

Source: Office of the Vocational Education Council, 2012a, p. 97.

While the study of Sotatithon Mallikamas and Pacharawalai Wongboonsin (2013, pp. 683-686) concluded the interviews of the executives in the region and communication group that Thailand's vocational managing has strengths and weaknesses as well as opportunities and obstacles in comparison with neighboring countries in the ASEAN region as follows:

2.4.1 Strength

1) Various education services provided by the requirements of the course suitable for economy and society in Thailand today.

2) Enough and thorough amount and distribution of colleges

3) The competency-based teaching trains the students to put their knowledge to practical work in all subjects taught.

4) Cooperation between educational institutions and enterprises to send students to internship and job immediately after graduation.

5) The quality of vocational education graduates

Graduates have accepted skills in the establishments both in Thailand and the multinational company investing in Thailand

6) Vocational students trained to work with the community around the school (Community service), and when finished, they are going to be an entrepreneur or a source of labor supply distributed in the community.

7) Quality education Compared to neighboring countries such as Cambodia, Laos, Myanmar and Vietnam.

2.4.2 Weakness

1) The negative image of vocational students, the violence and unqualified children

2) The quality of the children who study in vocational education is low. They are not smart/out of the General school system/poor/family issues.

3) The number of students in vocational diploma is low, contrast to the demands of the establishments

4) Thailand's vocational education is not qualified international standards, especially the vocational education of private sector

5) Vocational education program does not meet the needs of enterprises.

6) As a result, graduates are able to work immediately and enterprises have the budget and time to train new graduates.

7) Teachers/professor of vocational education cannot communicate or teach in English.

8) The availability of equipment/tools and techniques.

9) Lack budgets to send vocational education students to study or train abroad.

10) There is little research budget, so there is few researches to put into practice in the area/community.

11) In Thailand there is no network in cooperation with renowned partners such as Germany, Australia, etc., so no (Partner) to stimulate the quality of vocational Thailand.

12) Studies in Thailand also have a network of partnerships with establishments abroad to send students to internship/vocational training within and outside of ASEAN.

13) Do not have any department to manage the core body of knowledge about the region, English and ASEAN to pass on knowledge to the training courses across the country.

14) There is no teaching in the new majors, especially in the high-cost technology.

2.4.3 Opportunity

1) Demand for graduates who have high technical expertise, especially those who graduated in high vocational certificate.

2) The establishment wants to bilateral cooperation to produce graduates who are able to meet the needs of enterprises.

3) Vocational education in Thailand should focus on producing Highlights of Thailand graduates, especially in agriculture and business-technology and knowledge-based economy. This is still a lo of demand for labor in the manufacturing sector.

4) Professional development in the areas of cooperation in the development of vocational education and resources to the area with neighboring countries close to each other.

2.4.4 Threat

1) Graduates in vocational schools receive lower salaries.

2) Parents do not want their children to study in vocational schools due to the bad image and low income.

3) Management centers of bureaucracy and regulation make the allocation of resources, personnel and budget inefficient uneven.

4) Unavailability of personnel quantity and quality, English knowledge including knowledge and skills in modern technologies.

5) Managing a budget subsidy headcount. The schools/educational institutions have to maintain and increase the number of students in order to get a budget increase while the children are poor, or broke off from the general to the vocational school.

6) Managing a budget subsidy headcount is resulted in small vocational schools. The number of minority students, less budget and cannot use the money to develop schools equivalent to levels of private vocational.

7) Instability of the government and the management of the Ministry of Education affect the continuity in policy implementation.

8) Oversupply of vocational education (Especially low-quality vocational education), which has resulted from the redundancy of budget supporting the institution.

In summary, from a shortage of workers in the middle vocation both quantitative and qualitative, it is difficult to deny that it resulted from the failure of the management of vocational education policy. The mission of the production is to create workforce to meet labor market demands in Thailand. The truth is that these issues are issues that deserve attention and has been extensively studied. The causal conclusions and recommendations are to solve the problem clearly as reflected in the report of the study on the demand and the workforce production of Thailand, education about the production to meet the demands of the industry as well as abroad, strategy development and production of multi-department study.

However, with the above information found that the problem is still not resolved and it seems to be even more violent, especially when considering about other environmental factors such as Structure population or labor mobility in certain areas which might affect manufacturing of direct electronics such as automotive, electronics and textile of the industrial sector in The ASEAN Economic Community in 2016, the importance of education reform Act 1999 and the Education Act 2008. The objective is to enhance the management of vocational courses, and is also reflected as if all the parties involved surrender to the values of undergraduate and solved the shortages of labor with other approaches. The options open to those enrolled in the study at a higher level than it is to develop the production system and the medium labor force consistent with the needs of the entire labor market. This research will be analyzed in details in Chapter 6 in the political policy on vocational education: analysis project and the international relationship institutions.

In the next chapter, the researcher will study the concept, theory and research related to both domestic and international to understand overview of the issues and factors that affect the management of vocational training. It creates the framework, the concept of research into analysis and synthesis of the relationship between different associated factors. It is useful to develop a framework for cooperation between the public and private sectors. To reform the production system of the intermediate workers, the mechanical industry has to increase the advantage and enhances competitiveness of the country.

CHAPTER 3

LITERATURE REVIEW

In this chapter, the researcher presents concepts, theories and related research inside and outside Thailand. First, policy implementation theories are presented, then the concept of public and private partnerships is described, followed by the concept of skill formation. After that potential strengthening theories and related research are reviewed. Finally, the conceptual framework is proposed.

3.1 Related Theories

3.1.1 Policy Implementation Theories

Research and policy implementation are a case study. Most technocrats are researching for practices or the effective ways to use the tools including the best management in action to accomplish the target. They believe that when a good public policy goes through a good mechanism or procedure, it will result as the policymakers expected. However, they often found that policy, plan or project once they accepted that it was good, but in real practice it turned out to be a failure and they couldn't find the real reasons why. Therefore, they intend to study and research in the deep policy implementation in each case to find out the factors influencing success or failure. (Gurnack & Sharon, 1987, p. 364). So, the study will focus on understanding the facts in each policy more than presenting analysis framework or making any public policy theory (Pittaya Bawornwattana, 1984, p. 1). Therefore, the study of policy implementation has different aims depending on the researcher's objectives and interests. The research development from policy implementation can be divided into three periods (Lester, Bowman, Goggin, & O'Toole 1987, pp. 201-207) as follows:

1) Research in the First Phase has clear evidence from 1970-1975. Researchers in this period are interested in studying two issues in order to explain 1) obstacles in policy implementation in specific meanings and 2) the success or failure

of policy implementation but they have not studied the process of policy implementation yet. Most of them concluded that the policy wasn't successful and they did not explain in Model or they did not provide the way to solve it such as a research of Pressman and Wildavsky (1973). However, the researcher uses qualitative research in the case study that set too much study framework of variables, so it is hard to apply.

2) Research in the Second Phase from 1975 to 1985 In this period the researcher focuses on building and testing idea's framework of policy implementation to explain what factors affect the success of policy implementation. There are two types of theory which are 1) top-down theories and 2) bottom-up theories

3) Research in the Third Phase from 1985 until now is to synthesize and improve idea's framework. The researcher is trying to fix the weakness in policy implementation by integrating or synthesizing top-down theories and bottom-up theories together including presenting model in systematical analysis. Therefore, it makes a clear policy implementation and it can specify more causal relationship. (Goggin et al., 1990, pp. 13-19).

Policy implementation's research nowadays is still using theoretical ideas from the previous policy researchers but it is clearer with research questions. What happens in the process of policy implementation? Finally, is there anything evident or noticeable when there is a mistake or failure? Then the researcher looks into issues to correct the mistakes. Besides, there is application of Berman's ideas (1978). He divided policy implementation into two levels which are macro and micro. Therefore, the researcher develops his idea by integrating organization structure with policy implementation based on the idea that success or failure of implementation does not depend only on work in the organization but also the relationship between organizations. Macro will focus on link and change between organizations and micro will focus on change and adjustment within the organization or personnel within the organization after receiving the policy.

3.1.1.1 Factors Affecting Policy Implementation's Success

The study of policy implementation tends to give a great interest to factors affecting policy implementation's success. However, the study is still lacking clear theoretical concept, so most studies are guided in more specific case than theory.

The researcher tries to present his model to explain factors affecting success or failure of policy that he studies only. The researcher does not develop any theoretical model, so he will mention academics' works which are widely accepted to indicate factors affecting policy implementation's success or failure.

Pressman and Wildvsky (1973) wrote a book about "Implementation". They studied an effort of EDA (Economic Development Administration) which was a case study about implementation of creating jobs for unemployed people in Oakland California USA. Pressman and Wildvsky's (1973) research is the pioneering in policy implementation. Although they did not' present theoretical model about policy implementation, they showed some factors affecting policy implementation's success as follows:

1) Policy Implementation should not be separated from policy specification. The researcher should not think that policy implementation is the after process and free from policy specification.

2) The designer should find the direct way to accomplish the target of policy implementation to avoid the problem of too many decisions to make and it causes the complex of cooperation. Pressman and Wildvsky (1973) have opinions that there should be a building up of policy administration organization or project in policy administration decision.

3) The continuation of leadership is important to policy implementation's success. The discontinuation of important operators will make disorder in the project.

4) The researcher should consider carefully about an appropriate of fundamental theory of policy.

5) Difficulties of policy are important for the target to be accomplished.

Woradej Chanthornsorn (1985, pp. 499-503) has an opinion that the main point in this research is to be able to build the successful guarantee conditions of policy as follows:

1) The policy should be on an appropriate theory basis.

2) The condition bringing failure to policy implementation is no link between policy specification and policy implementation. Therefore, there

should be a link between policy implementation and policy specification and policymakers should have important role in policy implementation.

3) Ways to achieve the target of policy should not be complicated or less in cooperation with groups or organizations. The strategy of policy implementation should be on basis of ordinary accomplishment as possible.

4) If policy implementation is likely to face with an argument or a lot of complication, there should be a clear structure specification of policy implementation.

While Suphachai Yawaprapart (2004, p. 101) had reviewed foreign academics' achievements decades ago, he found many factors specifying success or failure of policy implementation. There are eight topics of them as follows:

1) Type of Policy
2) Policy's Objective
3) Political Possibilities
4) Technical or Theoretical Correctness of Policy
5) Enough Resources
6) Characteristics of Agencies in Policy Implementation
7) Policy Followers' Attitudes
8) The Relationship between Mechanisms in Policy Implementation

However, political possibilities consist of negotiation's variables between public and private sectors, supports from every sector, policy's impact to professional group supported by high society, media supports and elector supports. (Suphachai Yawaprapart, 2014, pp. 106-108). The Relationship between Mechanisms in Policy Implementation consists of variables in number of agencies, number of decisions, previous relationship between agencies implementing policy and interference of top agencies. (Suphachai Yawaprapart, 2014, pp. 116-118).

Woradej Chanthornsorn (2009) has analyzed factors affecting policy implementation from policy implementation model integration in deductive study from model of Eastern and Western Academics such as model of Van Meter and Van Horn, model of Sabatier and Mazmanian, model of Hambleton, model of Alexander and model of Woradej Chanthornsorn. He uses inductive study from researches of

Eastern and Western Academics such as economic and social policy, educational policy and innovative policy etc. Therefore, he concludes frame factors of policy implementation as follows:

1) Policy Factors consist of policy classification, problem solving capability of policy, capability of policy in action structure specification, objective's clarity and policy target, appropriate theory policy, target demand policy and other policies, reality policy, clear indicator specification of achievement, policy abidance to achieve the target, policy implementation potential and policy implementation experiment in some targets.

2) Mission Specification and Assignment Factors consist of clear procedure, accordance of project to targets and main policy's objectives, understandable practice, regulation specification in action, punishment specification and award and authority allocation.

3) Resource Factors consist of sufficiency of financial resources, equipment, tool, and place readiness, financial allocation suitability and resource distribution to agencies.

4) Organization or Agency Factors consist of organization structure, insistence or durability of organization, complication of interaction and organization networks, action flexibility, regulations in organization operation, number of personnel, characteristic and formality of organization communication, policy implementation capacity in the past, open communication system, organization learning and standard specification of action.

5) Administrative and Policymaker Factors consist of administrative leadership, administration skill and understanding, authority, complication of decision procedure, administrative support administrator participation, real condition understanding in policymaker servicing, ability in building motivation for officers, building relationship of members in organization and ability to solve lateness.

6) Personnel Factors consist of officer personality selection, policy attitudes, operation skill and capability, target acceptance and policy objectives, willingness in action, the way in responding the policy, change boundary for officers, adaptation ability to policy change, negotiation ability, and capability in learning from experience, and personnel trainings.

7) Environment Factors (society, politics, economy etc.) consist of impact from social, economic, political and technological condition, impact from policy resistance and objection, impact to social morals, political and law supports, central and local supports, participation from outsiders, media interests in the problems and relationship between policy environment and policy implementation.

8) Target Group and Public Service Recipient Factors consist of policy attitudes, people's supports, and understanding the benefits and the loss.

9) Coordination and Cooperation Factors consist of ability in coordination between sectors or within organization, accuracy and regularity of communication between organizations, number of agencies, and cooperation between agencies.

10) Public Relation Factors consist of media and communication modes in public relations and impact from public relations to action and target group.

11) Plan and Control Factors consist of efficiency in controlling, supervising and evaluating operation and promotion measures.

12) Inspection and Evaluation Measure Factors consist of reflection evaluation in planning process and plan/project design, project or policy evaluation and impact to personnel.

3.1.1.2 Public Policy Implementation Model

Van Meter and Van Horn (1975) are co-writers in "The Policy Implementation Process: A Conceptual Framework". They brought the research documents about the impact from the jurisdiction and public relations to use in designing an analysis model. They believed that it could be used in the case of a single organization and many organizations. This work had the same policy implementation as Pressman and Wildvsky (1973). The idea frame would begin at targets and objectives of policy, and policy implementation would vary by the characteristics of policy. There were two characteristics of policy as follows: 1) Volume Changes and 2) Sympathy or Cooperation in the target of policy participants.

From the study results, we found factors affecting change in organization and sympathy in policy target which they developed to be the model in

policy implementation. There are six factors or main variables related to action. The policy factors such as standards and objectives of policy are external variables and four internal variables are resources, organization communication and policy activities, characteristics of agency in policy implementation, social, political and economic conditions and willingness of policy implementation. These factors are related together as in the Figure 3.1.

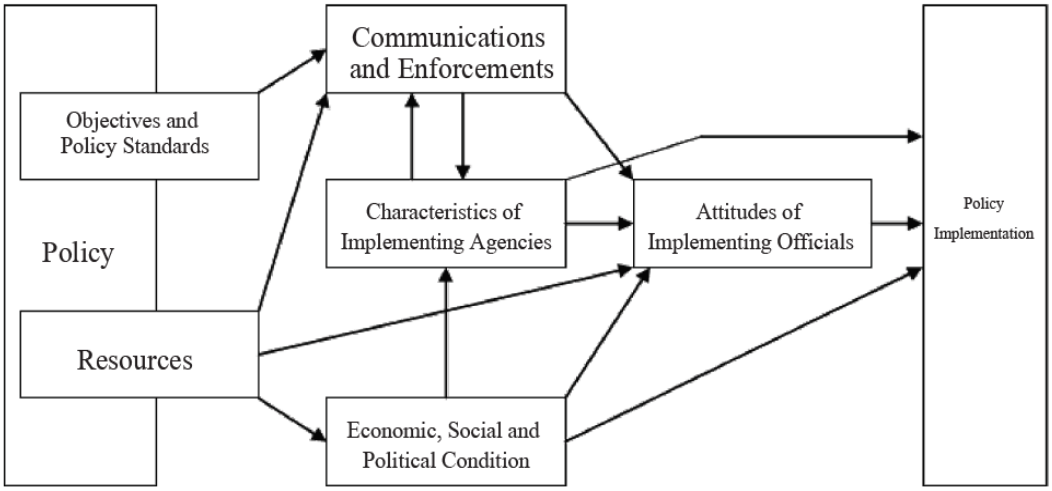

Figure 3.1 Policy Implementation Model of Van Meter and Van Horn
Source: Woradej Chanthornsorn, 2009, p. 122.

Although the model of Van Meter and Van Horn is from the review of research not from the research study, it is clear that it focuses on impact factors or influences in implementing the policy. Besides, they indicate factors that have a lot of influences to policy implementation and how those factors are related to.

Bardach (1977, pp. 158-169) wrote a book about "The Implementation Game: What Happens After A Bill Becomes a Law". His study wanted to explain the phenomenon in policy implementation. He was interested in the roles of policy implementation. His study frame in policy implementation was system of games. He had studied academics' works in problem analysis frame of policy implementation and he found that if he wants to look in a complete policy implementation, he will have to look in the system of ruse or trick in a competition to win in the agencies or personnel in policy implementation.

From the study of Bardach, the policy implementation game has important obstacles because it resulted in four opposite forms which are 1) Deflection: they misuse the resources especially money, instead of using the money in policy implementation, they use it in another way. 2) Change the target of policy from previously 3) Obstacles in an effort to control the behavior of administration openly 4) The power of personal work and political power are exploding and dissolving in the game instead of using it in pushing the policy implementation.

Bardach (1977) explained that there were many games in policy implementation such as 1) Easy money: it was the technical use of agency to get the money but the agency did not use it honestly and directly to the purpose. 2) Easy work: it was the technique of not working alone but tried to participate in the project with other agencies and let those other agencies work for his agency, so his agency would work easily and comfortably. 3) Making the target deviate: it was an effort to deviate the target which might not meet his agency demands or targets for getting the benefits that his agency needs. 4) To admit to do it but actually not doing it: after receiving the policy, he would delay or halt the work until it did not finish in time. 5) Creating the conditions for his own: he put conditions in many cases. No matter what happened to the project, himself or his agency, he could get away from those troubles because he had made conditions before. Besides, there are also a lot of games to play.

In the viewpoint of Bardach, he thought that the analysis of policy implementation the characteristic of interaction strategy process between benefit groups by political process frame makes us explain empirical phenomenon clearly. We have to consider: what they are betting or benefitting, what their strategy and cunning are, what their resources are, and what their rules are, what they communicate with the players including those who do not want to play the game. Therefore, the policy implementation will be clearer.

From the works of Bardach, we have to turn our interest to deeply analyze in political arena or the researcher has to pay attention to personal factors of those who implement policy.

Sabartier and Mazmanian (1980, pp. 538-560) presented a study frame of policy implementation in “The Implementation of Public Policy: A Framework of Analysis”. Sabartier and Mazmanian thought that there are a lot of gaps in policy

implementation integration of technocrats in the past and it was not enough to explain the reality of policy implementation. So, they developed a study frame to use as analysis frame in policy implementation. There are three independent variables (Sabartier & Mazmanian, 1980) as follows:

1) Tractability of the Problem consists of four sub-variables which are 1) Correct Theory and Science 2) Variety in Behavior of Controlled Target Group 3) Percentage of Target People in Behavior Changing and 4) Level of Behavioral Changes. They explained that some policies could achieve the target easier than others if there are theories to explain the logical relation, techniques to solve the problem, a few controlled behaviors, a few target groups of people, and a few behavioral changes.

2) Ability of Statue of Structure Implementation consists of seven sub-variables which are 1) Certain objectives and clear priorities 2) Policy based on accurate theory 3) Sufficient resources 4) Good coordination in policy implementation within and between institutes 5) Regulations support agencies 6) Officers provide relationship with policy objectives and 7) Providing channel for outsiders to participate in policy implementation

3) Nonstatutory Variables have six sub-variables as follows: 1) Economic and Social Conditions and Technology 2) Public Support 3) Elector Attitudes and Resources 4) Government support in financial and law resources 5) Media interest in the problem that policy aims to solve and 6) Relationship and skill of the leader in action. They also explained that financial and social conditions in each time or place and public supports will also affect political supports and objectives or products of the policy. These variables sometimes have connection such as relation variables of operators which make the policy objectives successful. Sometimes it depends on professional norm, personal value, and policy support from beneficial groups and government.

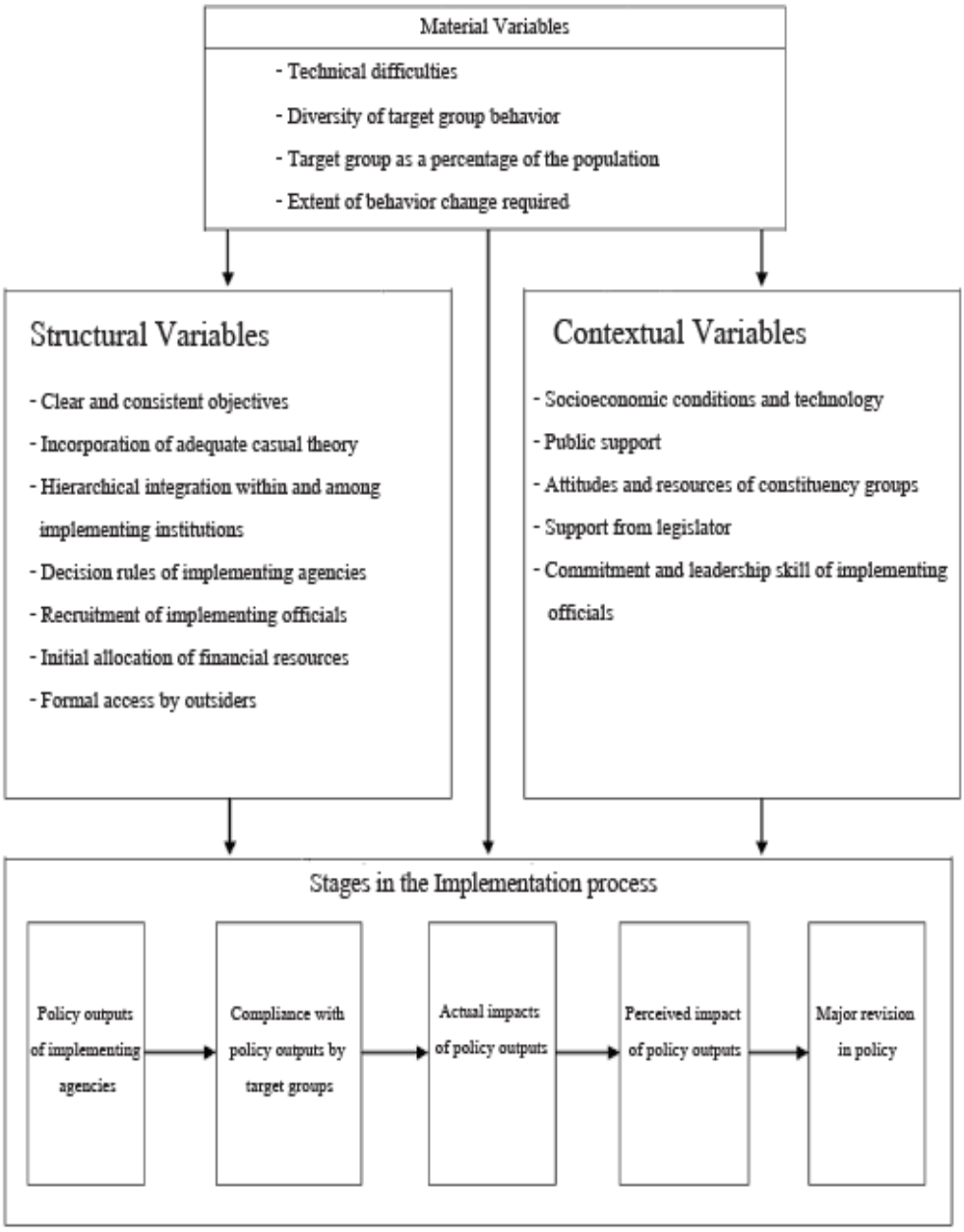

Figure 3.2 Variables Related to Policy Implementation Process of Paul Sabartier and Danial Mazmanian

Source: Woradej Chanthornsorn, 2009, p. 149.

Three groups of independent variables will affect dependent variables. It means there are five procedures in policy implementation which are linked in a chain as follows:

1) Policy Outputs: Policy objectives are converted to regulations and practical methods in consideration.

2) Compliance means to comply with regulations.

3) Real Impact of Agency: This step will happen when policy's product is in accord with policy objectives. The policy has theoretical basis connected with behavioral changes and policy achievements.

4) Acknowledgement of Impact from Policy Decision: It can be seen by the electors and the government.

5) Improvement is the review of important issues in law.

Sabartier and Mazmanian's (1980) idea frame emphasizes on bringing regulation policy to implement. Two of them try to correct defectiveness of technocrats in the past by adding some variables in. Six important factors in the efficient policy implementation can be concluded as follows:

1) The policy has clear and certain objectives.

2) The policy has foundation or comes from appropriately logical theory. It gives authority in follow-up and law enforcement (with the target group) to policy implementation operators.

3) The policy has determined the structure of policy implementation process, so the officers or the target groups can follow it as they wish. Also there are mission assigns to the agencies appropriately.

4) The leader has political skill and administration and relationship with the policy target.

5) The project has continuous support in implementation from the government.

6) Policy objectives importance should be stable forever and not be reduced because of replacement of other policies or social and economic changes.

Edward (1980a, pp. 16-20) proposed his writing about "Implementing Public Policy". He proposed an idea of policy implementation analysis that policy implementation will be successful or failed depending on both supporting or obstructing factors as follows:

1) Communication is to send a message or policy meaning to policymakers. It should be in a clear and certain command. Policy implementation operators have to receive the same context of message as the commander sends.

2) Resources are the most important things between communication, meaning and resources in policy implementation including working group, authority, news, facilities, subsidy, equipment, and tools. The most important component is the experts.

3) Dispositions or Attitude: Operators must have good attitudes to the policy and accept the policy such as if the policy operators are not willing or have bad attitudes to the policy. The operators may not pay attention or sacrifice their time to work, so it may cause problems to policy implementation.

4) Bureaucratic Structure is often set to have a complex structure so it can operate a routine work in a normal situation. With the size and complication of bureaucratic structure, it may cause the problem of lateness in achieving the target.

Hambleton (1983) has studied concepts about policy planning and operation of government agencies and has proposed about policy planning system in policy implementation analysis. He has proposed three theories of policy planning system as follows: 1) Theory of operation planning 2) Theory of relationship between organizations and 3) Theory of financial crisis. From the study of Hambleton, he has five important factors of policy implementation in his consideration as follows: 1) Factors in communication of policy 2) Factors in variety of agencies 3) Factors in view point and ideal of operators 4) Resource factors 5) Political factors related to policy planning (Woradej Chanthornsorn, 2009, pp. 166-170)

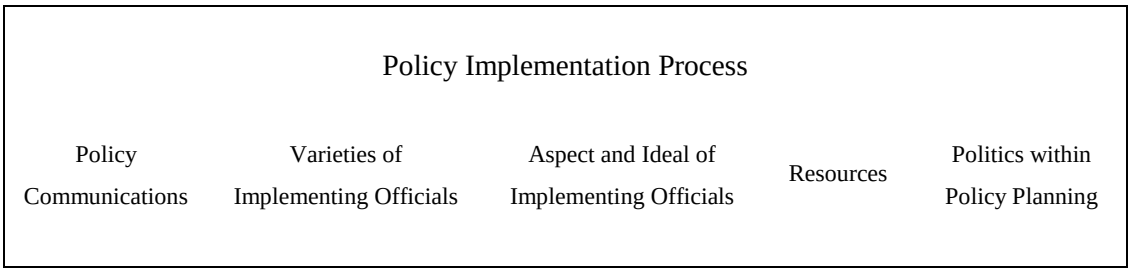

Figure 3.3 Policy Implementation Model of Hambleton

Source: Van Meter & Van Horn, 1975.

However, Hambleton (1983) uses policy planning system to explain phenomenon in policy specification procedure and policy implementation based on three theories as follows:

1) Theory of operation planning is based on concepts of general system which emphasizes on using policy planning system to seek for a resolution to solve the problems reasonably. The procedures are finding the goal by using logic, analyzing systematically, seeking options of policy by using logic, evaluating those options systematically, and measuring capacity of policy.

2) Theory of relationship between organizations: it emphasizes on policy planning system for exchanging resources between and within organizations. They must depend on each other. The resources are including regulations in operation, financial resources, political resources and information. To reduce conflicts in the agencies, they have to negotiate in resource uses and benefits between and within agencies.

3) Theory of financial crisis emphasizes on policy planning for proposing to have financial resources controlled in centralization more than giving local agencies freedom to respond to local demands and pressure from top agencies by extending expenses. This financial centralization helps protect financial crisis to happen.

Woradej Chanthornsorn (2009) has studied theory concepts of policy implementation of foreign technocrats and concluded that studying policy implementation is seeking for methods and ways to improve policy, plan, and better action in the project. There are six models of policy implementation as follows:

1) Rational Model (Woradej Chanthornsorn 2009, pp. 130-133): This model holds onto assumptions that successful policy must have the clear specification of objectives and missions. There are assignment provides and work standard specifications to organizations' agencies. There are action evaluations as well as punishment. However, the policy implementation process begins from the clear objective specifications to make operators understand what targets or results the policymakers want. It will help operators to be able to specify assigned mission or specific responsibility of each sector in accordance with policy objectives. It will help coordinate in action smoothly. Besides, the working standard specification is

beneficial to a complete evaluation system. The clear working standard also results in using punishment system more fairly. Having justice in the system will also help promote the working standard to be higher. In conclusion, the policy implementation results depend on the clear objective specifications. There is converting the objectives to subtasks under the special responsibility for convenience in checking, controlling and evaluating.

2) Management Model (Woradej Chanthornsorn, 2008, p. 133) is based on organization theory. It emphasizes on giving interest to capacity of organization because it believes that the success of policy implementation depends on the capacity of organization to operate in accordance with expectation. Moreover, it depends on an appropriate structure of organization, qualified, knowledgeable and capable personnel including organization administration skill and equipment and budget readiness.

3) Organization Development Model (Woradej Chanthornsorn, 2009, pp. 135-136) is emphasizing on the study of policy implementation in relationship and acceptance to respond psychological demands and human society. This kind of interests is about bringing organization development model to apply directly. The main focus is participation in organization under assumptions that "participation will cause working efficiently. Successful policy implementation is probably motivation, appropriate leadership, organization member relationship, and participation for acceptance as well as building teamwork more than controlling or using virtual authority of commander". However, since the segregation of policy specification should come from a higher command and the plan follow-up should come from a lower level, it is against the truth. Therefore, to solve this deviation, we should bring officers to participate and be a part in specifying or framing the policy regarding as those policies are coming from officers themselves.

4) Bureaucratic Process Model (Woradej Chanthornsorn, 2009, pp. 137-139) This model is developed from an idea to build a frame of social reality of organizational sociologist. He tries to build the frame of social reality in organization based on assumptions that authority is dispersed in organization which means every organization member has his authority in judgment especially the government officials who have responsibilities to contact and service street-level

uncontrollably by the commander. Cramming a new policy that will affect or change those government officials' daily routine is often useless unless they accept or adjust those policies to be a part of their daily routine. Hereby, the failure of policy implementation is not about inefficient administration but it comes from the policymakers or the policy administrators who do not understand the reality of practice. In conclusion, the policy or project is sometimes hard to happen from the top of social structure. Sometimes the policy specification and the policy design to respond officer demands or people's participation is necessary to be developed from a lower level. For the development to take place, it is necessary to pass through the learning process to understand the social reality and the real interaction behavior.

5) Political Model (Woradej Chanthornsorn, 2009, pp. 139-140): This model believes that the policy implementation success comes from players' capabilities or representatives of organization, group or institute and the relationship with external factors. This model thinks that consensus and participation are hard to happen but conflicts are the natural phenomenon that can happen in social and general system. Hoping that all parties will agree and follow up the policy are hard because the policy is politics which is about allocating something valuable to the society and there are always be the beneficiaries and the death benefits, so it is normal that every party will have to protect his interests in priority. Therefore, the policy implementation is about confrontation, conflict administration, supporter pursuit or acceptance, advertising, condition creating and negotiation in resource allocation between personnel, personnel group, agencies as well as organizations. Parts of the successful possibilities in policy implementation depend on the negotiation ability, the authority status and the available resources of agency for some organization representatives to use as a tool in negotiating, politician, media, pressure group, and benefit group, important personnel including personality, knowledge, capability, and player expertise.

6) General Model (Woradej Chanthornsorn, 2009, pp. 143-146) is the model that gathers all five models. It is focusing on seeking the impact of factors in successful policy implementation, and it is divided into three dimensions as follows: Dimension 1 is measuring the policy success and failure from product, result, and final result, Dimension 2 is a measurement about policy impact and Dimension 3

is measuring whether policy results can be beneficial to overall country or not. Four independent variables are organization capacity variables, planning and controlling efficiency variables, leadership and cooperation variables, and politics and administration and external environment variable. In conclusion, the policy implementation is activities that happen after the policy specification and the activities can be explained both in context and process.

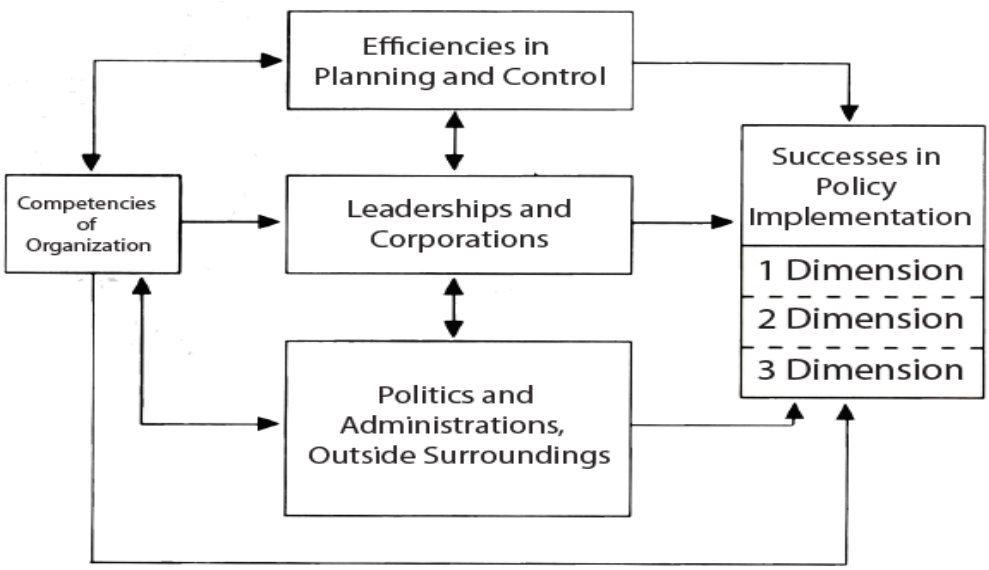

Figure 3.4 General Model

Source: Van Meter & Van Horn, 1975.

Organization Capacity Variable consists of five sub-factors that are organization structure, budget, personnel, equipment and place. However, part of successful policy comes from capacity strength that organization has both in external and internal structure.

Planning and Controlling Efficiency Variable consist of clearness and possibilities of objectives and goals of policy, mission specification and assignment, working standard specification, policy pursuing, controlling and evaluating system, and justice of measure in pros and cons.

Leadership and Cooperation Variable: If the administrators in the agencies want the policy implementation to be successful, they must use an

appropriate leadership and know how to use positive motivation with operators. The administrators can persuade the organization members to participate in operation for building relationship and acceptance between other members and they must know how to build efficient teamwork.

Political and Administration and External Environment Variable: This variable has the greatest importance in creating successful policy implementation due to the fact that successful policy implementation comes from players' abilities or representatives of organization, group or institute and relationship with external environment factors. These variables consist of multiple sub-factors such as support or resistance level from parties, number of agencies and dependence level between agencies, ability in negotiation with external environment and conditions of social, economic and political change.

In conclusion, policy implementation will be successful or failed, it depends on many factors such as policy clearness and continuation, political support, budget support and quality workforce as well as other resources. Besides, policy implementation is a process that happens after specifying targets in the policy. The responsible agencies will bring these targets to administer for achieving the objectives by considering about factors in the procedures. Therefore, policy implementation is a complicated process that needs a lot of personnel or agencies in making decision to push to a complete target. If considering thoroughly, we will find that policy implementation has characteristic of fight between benefit groups or also has the same characteristic of a political process. In overview, it can be concluded that the study of policy implementation is the study of seeking the methods and ways to improve policy, plan, and operation in the project to be better. Therefore, the context of policy implementation is emphasizing on pursuing explanation about phenomenon or social reality within policy implementation process for studying development ways and creating strategy for a successful policy implementation.

3.1.2 Public Private Partnerships: PPPs

3.1.2.1 The Meanings of PPPs

For the meanings of PPPs, many organizations have given the meanings of it (Bureau of the Budget of Senate the Secretariat of the House of Representatives. 2016, p. 5) as follows:

Organization for Economic Co-operation and Development: OEDC has given the meaning of PPPs that it is an agreement between one or more public and private investor. The private sector will provide the government reciprocal service. The private sector will get profit from servicing and the government will achieve the target of expected service delivery.

International Monetary Fund: IMF proposes that PPPs is the subject of agreement that the private sector is the asset provider and delivers infrastructure service which previously the government was the provider. Apart from that the private sector is the operator and the financing, PPPs has another two important characteristics that is emphasizing the private sector to be the provider and the investor in public service and transferring important risk from public to private sector.

European Commission: EC proposes that generally PPPs includes cooperation forms between public agencies and business group which aims for financing in construction, maintenance as well as administration in infrastructure service.

Standard and Poor's (S&P) (n.d.) has explained the meaning of PPPs that it is the relationships between the public and private sectors both in medium and long term involving with risk sharing and compensation from using various skills from sectors, expertise and finance to lead to expected policy results.

European Investment Bank: EIB thinks that PPPs is in Generic term which means a forming relationship between public and private sectors that often has objectives to bring resources and/ or expertise from private sector to use in asset supply and delivery, and public service.

In conclusion, the meaning of PPPs is Public-Private Partnerships. it is the project that private sector participates with public sector in building, improving, developing and administering fundamental public utility and public assistance and services to the people under risk frame and time frame.

3.1.2.2 Public-Private Partnerships Forms

Increasing private sector roles in public investment projects opens a chance for private sector to participate in public services such as Infrastructure, Public Services, and State Property Utilization etc. There are various boundaries and operations in many foreign countries such as World Bank and Asian Development

Bank called Public Private Partnerships PPPs. The objectives are to reduce public investment burden and increase efficiency in investment and administration, knowledge and technology transferring including extend boundaries and increase public service quality. There are many forms of operation. (Bureau of the Budget of Senate the Secretariat of the House of Representatives. 2016, p. 9) as follows:

1) Management Contact Public sector hires professional private sector to administer public-own project. Public sector may determine the compensation structure for bounding private sector with turnover to induce it to work efficiently.

2) Lease Contract Public sector leases private sector assets to operate. The private sector is responsible for revolving fund as well as risk from turnover and paying compensation to public sector for using assets.

3) Build-Operate-Own (BOO): The private sector is an investor in developing and operating the project. It takes the risk from turnover and does not have to deliver property ownership to public sector. Public sector may determine privileges to induce private sector such as servicing, service sale contract for income insurance etc. and may determine private sector to pay compensation in different forms.

4) Build-Operate-Transfer (BOT) or Build-Transfer-Operate (BTO) The private sector is an investor to develop and operate the project. It takes the risk from turnover, and has to deliver property ownership of the project to public sector when it is ready to open the service (BOT) or end of the contract (BOT). The public sector may determine privileges to induce private sector such as servicing rights or sale contract for income insurance etc. and may determine private sector to pay compensation in various forms.

5) Joint Venture Public sector participates with private sector in partnerships for operating by taking risks from investment and joint operations.

Therefore, PPPs is an operation form that public sector lets private sector to participate in project operation in public services for increasing operation and service efficiency. It is emphasizing on efficient service worth with capital more than public sector owns or operates by itself. However, Joint Venture between public and private sector can affect involving people. The project will receive technology

and innovation from private sector including project cost savings while private sector will have more channels in business operation. Besides, people will get benefit from efficient service with reasonable price.

3.1.2.3 Benefits and limitations of Investment in PPPs form

Increasing roles of private sector to participate with the government will increase work efficiency, build working options and extend public service access to people. Meanwhile, it will reduce investment budget limitations in public projects during economic crisis which make the government collect revenue insufficient for investment demands while loaning money is limited with legislations. However, Stake-holders' benefits from PPPs are concluded as follows:

1) Benefits to Public Sector: Giving the private sector to operate since the beginning, the project (design, construct, maintenance, operate) will help save costs because the private sector can design for saving costs in the project. The government does not have expenses or investments until the construction are finished. Besides, it divides the risk management duties to those with talent to manage each risk factor more efficiently than public private sectors. It reduces lateness problem and additional expenses of the project. Due to the fact that the private sector must administer money itself, it causes the motivation to finish the construction within an appropriate time to reduce expenses and interests and it can charge the public service as fast as after beginning the project.

2) Benefits to Private Sector: The project in PPPs form will open more chances for the private sector to do the business in public services with efficiency. Sometimes the economic condition is beginning to slow down and it is deemed to be an economic support of the country by promoting the private sector to invest in the pubic project.

3) Benefits to people: People will get standard and efficient service because PPPs project is an operation and servicing by gathering public and private expertise to achieve the objectives efficiently and effectively. The service charge that the private sector gets will come from a calculation based on servicing quality. The compensation will be deducted immediately if the private sector cannot provide service as the public sector expected.

However, an investment in PPPs has limitations as well. The details are as follows: (Kongkwan Sila, 2010, pp. 4-5)

1) Supervising an investment project in PPPs may have more complications than services that public sector has operated itself. Supervising is important for PPPs project to give justice to every party and have clearness in regulations to allow the private sector to invest in, especially the issue of Risk Transfer between public and private sector. If the operation isn't appropriate, it will make PPPs project failed and inefficient such as M5 Toll Motorway project of Hungary. The project is using Motorway lower than 55% in estimate and in the contract it determines the public sector to insure minimum Motorway utilization rate. Then public sector has to take aid on the private sector in co-investing project (PPPs) with a lot of money etc. Besides, supervision must give people benefits from efficient service and appropriate capital and the project in PPPs must have transparency and value for money.

2) Project Risks in the form of PPPs are as follows:

(1) Development Risk

Design and Construction Risk may cause more capital and substandard service. The impact of risk may cause lateness or more capital in the design and construction procedures. Moreover, inappropriate design and construction may affect infrastructure quality including quality of service.

(2) Technology Risk

Change of technology or new uses of technology may not be as expected and

(3) Revenue Risk: Price/demand may result from uncertain service demands or service charge that is different from planned, so it causes service income differently from expected.

(4) External Risks: Force Majeure Risk is the risk from uncontrollable events which can cause lateness and breach of contract of private sector in the project and

(5) Political Risk

Political change may cause discontinuous policy process which will impact to PPPs project.

3.1.2.4 PPPs Project in Foreign Countries

PPPs project of foreign countries will cover in many fields such as transportation, resources and environment, public health, education and sports etc. as in the table 3.2. Besides, it increases private sector roles to new mission support of the public sector to increase service efficiency with people such as the e-Government system etc.

Table 3.1 Examples of Public Private Partnerships in Important Majors

Fields	Country
1) Education	Australia: Government grants Axiom Education Consortium (ABN Amro, St Hilliers, Hansen Yunchen and Spotless) to provide educational service for the junior high school in the area under their authority. This is the first PPP in NSW and the contract signed in December 2002. It has amount of 137 millions Australia.
2) Public Health	UK: Government uses the National Health System (NHS) and King's College Renopathy Hospital joint with the private to increasing the service point. The project earns 2.2 US dollars. Australia: Newcastle Master Hospital starts the project for the patient who has serious mental health problem and grants Novacare Consortium (Abigroup, Compass Group, Honeywell and Westpac) to administration. It has amount of 132 millions Australia.
3) Natural Resource and Environment	Australia: 1) Barwon Water Biosolids Management project: enfranchise to the private for biochemical waste elimination 2) Government grants the Barwon Water co., to run the water management project in Victoria state after bidding under the Partnership Victoria policy. It has amount of 77 millions Australia.
4) Energy	Japan: the Ministry of Economic, Commerce and Industry runs the electricity project by bidding from the private. It aims to create the Independent Power Producers model, especially the advanced nuclear power plant which can resist the earthquake.

Table 3.1 (Continued)

Fields	Country
5) Juristic	Australia: The Victorian County Court Facility have a joint venture with The Liberty Group Consortium Pty Ltd (TLG) by which Victoria state will run the juristic and justice matters and the private will run the administration and maintenance system.
6) Logistics and Transportation	Korea: Government grants the private investor to the commercial development in the area backside of the harbor and get earns. In 2017, there are 19 PPP projects on the harbor development.

Source: Kongkwan Sila, 2010, pp. 8-9.

From the previous study of Public-Private Partnerships: PPPs especially from the case of foreign countries, we found that PPPs in foreign countries covers in more fields than in Thailand (Thailand has PPPs in transportation and logistics the most). There are many economy fields that PPPs can operate more in the future for Thailand such as education, public health, resources and environment, energy, and Court of Justice process etc. Importantly, with the limitations of loaning money and the investment process must have considered the fiscal stability of the country, so it is necessary to depend on joint venture between public and private sector in the future. However, the success of PPPs project needs many factors as follows: 1) Political Commitment in investment plan in infrastructure and policy continuation though there is political change. 2) Institutional structure that supports PPPs project. There are agencies responsible for PPPs policy in fundraising, private sector role promotion, project evaluation, negotiation with private sector, and project supervision. 3) An appropriate investment: It must be specified the boundary of commercial investment projects that the private sector is interested in including 4) Potential development and readiness of private sector in joint venture with public sector: Thai private sector is able to get the benefits and is ready to invest with the public sector tantamount to Multinational Corporation. (Kongkwan Sila, 2010, p. 9)

3.1.2.5 Cooperation between Public and Private Sector in Education

From the above, cooperation between public and private sector often appears in the form of contract that the government makes with private sector (propose to arrange the service according to quantity and quality in price and time agreement). This definition covers different kinds of contract which may supply different and various services in complexity. This service supply includes educational administration such as administration, maintenance and support services (such as transportation etc). However, making the contract to be a tool to increase educational roles of private sector may have many benefits over an old style of education work of public sector such as higher efficiency, more options, and especially for people who used to get bad services, they may get wider access to public sector service than before (the same old method). Increasing the private sector roles in education with contract or coupon has more benefits with special skills in public school operation and administration. It gets benefits from avoiding giving salary and inflexible working regulations in public employment.

The PPP continuum depicts the main forms of publicly funded and privately provided education across the world. It ranges from systems where all provision is strictly public to systems where it is largely publicly funded and privately provided. This conceptual framework helps to identify the extent of a country's engagement in PPPs in education (figure 3.5). The continuum assumes that the responsibility for funding largely remains with the public sector. (Patrinos, Barrera-Osorio, & Guáqueta 2009, p. 16)

Low PPP High PPP

Lacks	Nascent	Emerging	Moderate	Engaged	Integral
100% Public			100% Private		
Strictly public systems (regulation, finance, provision)	Private schools exist	Subsidies to inputs in private schools	Contracts with private school to provide a portion of education	Private management of public schools	Vouchers; Funding follows students

Figure 3.5 The Public-private Partnership Continuum

Source: Patrinos et al., 2009, p. 16.

The main objective of PPPs is to increase the enrollment rates and improve the education outcomes such as standardized test scores and dropout rates, particularly of students from low-income families. From the government's point of view, reducing costs alone can be an important objective. Table 3.2 presents information on the strengths of the four types of contracts-vouchers, subsidies, private management, and private finance initiatives-with regard to the four main objectives of PPPs: increasing enrollment, improving education outcomes, reducing inequality, and reducing costs. (Patrinos et al., 2009, p. 32)

Table 3.2 Expected Effects of Different Public-private Partnerships on Four Main Education Objectives

Contract	**Effect on increasing enrollment**	**Effect on improving education outcomes**	**Effect on reducing education inequality**	**Effect on reducing costs**
Vouchers	Strong: number of student who receive the voucher	Strong: school choice	Strong with targeted	Strong when private sector is more efficient
Subsidies	Strong: use of already built private infrastructure	Moderate: limited by available places and equality of service delivered in the private sector	Strong with targeted	Moderate
Private management and operations	Moderate: limited by the supply of private school operators	Moderate: limited by available places in the private sector	Strong with targeted	Moderate
Private finance initiatives	Moderate: limited by financial constraints	Low	Strong with targeted	Strong

Source: Patrinos et al., 2009, p. 32.

In terms of enrollment, vouchers and subsidies can in theory deliver very significant positive outcomes as long as there is an adequate private supply of school places. However, these contracts may also reallocate students between public and private schools, and therefore, the net gain in enrollment can be small. Private management and private finance initiatives require partners to make large initial capital investment in the construction of schools, limiting their ability to produce substantial changes in enrollments. In contrast, private finance initiatives can only influence education outcomes to a limited extent because the link between infrastructure inputs and education outcomes is weak: changing only infrastructure-without changing the pedagogic methods and teaching-will have little or no effect on final outcomes (Patrinos et al., 2009, pp. 32-33)

3.1.2.6 The Positive Outcomes of the Private Provision of Public Services

There are four positive outcomes of the private provision of public services (Patrinos et al., 2009, p. 4)

1) PPPs can create competition in the education market. The private sector can compete for students with the public sector. In turn, the public sector has an incentive to react to this competition by increasing the quality of the education that it provides.

2) PPP contracts can be more flexible than most public sector arrangements. Generally, the public sector has less autonomy in hiring teachers and organizing schools than the private sector does. Public-private contracts can be a better fi t between the supply of and demand for education. Flexibility in teacher contracting is one of the primary motivations for PPPs.

3) Governments can choose private providers in PPP contracts by means of an open bidding process in which the government defines specific requirements for the quality of education that it demands from the contractor. The contracts often include measurable outcomes and clauses that specify the condition to deliver a certain quality of education, and the contractor with the best or lowest cost proposal is then chosen. This one characteristic of the contract alone can raise the quality of education.

4) PPP contracts can achieve an increased level of risk-sharing between the government and the private sector. This risk sharing is likely to increase

efficiency in the delivery of services and, consequently, to induce the channeling of additional resources to the provision for education.

Table 3.3 The Effects of Different Types of Public-private Partnership Contracts on Education Outcomes

Factor	**Private management of schools**	**Vouchers**	**Subsidies**	**Private finance initiative**
Flexibility	Significant	Moderate	Moderate	Low
Quality criteria	Significant if in the contract	Significant if parent and student driven	Moderate but significant if in the contract	Low
Risk-sharing	Low	Low	Moderate	Significant
Competition	Low	Significant	Low	Low

Source: Patrinos et al., 2009, p. 35.

Thus increasing the private sector's role in education can have several potential advantages over the traditional public delivery of education. Whether these benefits are actually realized depends greatly on how well designed the partnership between the public and private sector is, on the regulatory framework of the country, and on the capacity of the government to oversee and enforce its contracts and partnerships with the private sector.

3.1.2.7 The Negative Outcomes of the Private Provision of Public Services

However, there are some negative outcomes associated with the private provision of public services (Patrinos et al., 2009, p. 4)

1) PPPs will lead to the privatization of education and thus will reduce the government's control over a public service.

2) Increasing the educational choices available to students and their families may increase socioeconomic segregation if better prepared students end up self-selecting into high-quality schools, thus further improving their outcomes.

3) PPPs will lead to poorer students being left behind in the deteriorating public schools that lose the support of more educated parents.

In conclusion, the forms of cooperation between public and private sector in education are as follows: The public sector hires the private sector in the contract to provide education service both in qualitative and quantitative. The private sector gets budget support from the government and becomes an education manager. It can develop education quality quickly and extend class attendance rate especially poor children. However, PPPs still has controversies, for example, some study results found that public private cooperation in education causes more gaps between students by using income and students' grade in criterion without developing education in overview. Some reports mention about education coupon which causes competition between students with good grades and not all the parents can choose high standard school for their children while private sector participates in primary and secondary education more.

Importantly, even if the study management in that characteristic is successful because every sector cooperates together, the study management must have transparency. For hiring the private sector, the government must assign a clear responsibility to all sectors. It must have clear objectives and expectations. It must collect information from the results to evaluate the advancement and any employment contracts. However, nowadays there are many kinds of educational contract for services in developing countries. Governments in some countries buy services in education production such as in teacher training, training, administration, and curriculum management or school facilities from the private organization. Some governments make a contract with the private organization in private school management and administration including operation of activities relating with education process. Some governments arrange education for special students. Challenges and benefits have different input, process or results. However, in the past two decades, there are not any works that clearly conclude the results of public and private cooperation in education clearly.

Aside from the previous cooperation between public and private sector, the concepts that should be talked about to show a concrete example of public private cooperation in workforce development for strengthening capacity in competition of

the country are University for Industry: Ufi and Work Integrated Learning: WiL. Ufi is derived from the idea that the English government realized one of the most important problems of the country that is skill and knowledge shortage. The knowledge and skill that will help labors have a better chance for getting a good job, advancement, and good life. Importantly, skill and knowledge will help labors enhance their potential and capability higher enough for a competition in production and service system with Competitors and Partners in global community. An establishment of Open and Distance Learning has objectives to stimulate a lifelong learning among people especially people in labor market or those who want to enter labor market. It promotes students to have a chance to learn and develop skills to meet labor market demands with the aid of modern IT and communication as an important tool in supervision through thousands of Learning Centre Hubs scattering around districts all over the country. Ufi is an organization in the type of Ufi Co., Ltd. established in 1999 with 2,480 million Baht investment or 40 million pounds. It is a nonprofit organization which in the early stages major share held by the government, but it has an objective to reduce investment dependence from the government within the first two years of operating. That is to say Ufi is an educational organization independent from the government and with this status helps create organizational culture balanced between business mode and public benefit target. In the process, Ufi isn't the education provider. However, after appointing Educational Advisory Group and Employers' Advisory Group (to give viewpoints and opinions from exterior viewpoints to support Ufi in policy specification and implementation), Ufi will supply and deliver product and service through Partners in different fields of both public and private sector and among local, regional and national. (Office of the National Education Commission, 2001, pp. 18-19).

About the concept of Work-Integrated Learning: WIL, it is one of the experiential learning cases that help students have a chance to apply knowledge, working skill and special skill related to profession. Students get to know a real working life before graduating. Due to the fact that it is an education management under cooperation between schools, establishments and professional organizations, aside from students' benefits, the establishments and the schools also get benefits in cooperation, work development and improvement, and education curriculum to meet labor market demands. However, WIL can be divided into nine forms as in Table 3.4.

Table 3.4 WIL Forms

Form	Characteristic	Example
1) Pre-course Experience	Pre-requisite of work experience in the enrollment	Pre-requisite of work experience in farm in the enrollment in the faculty of agricultural science
2) Sandwich Course	Work requirement during phase of education which normally determine for four or three months training during study in the university before graduation	Engineering Programs in King Monkut's University of Technology North Bangkok
3) Cooperative Education	Determining working periods in the program, theory and practice integration for increasing graduator's employment	Programs in Suranaree Technical University and other public and private universities
4) Cognitive Apprenticeship or Job Shadowing	Emphasis on behavior observation and organizational culture absorption by the user	Jurist, Lawyer and Governor
5) Joint Industry University Course	The joint and subsidized program by the user including the personnel and equipment	Engineering program, business program and others
6) New Traineeship or Apprenticeship	Training under the well organizing system and training in or out of the college with the structural operation	Veterinary and agricultural science
7) Placement or Practicum	Developing the essential skill or experience for the future by make time for more training in the workplace	Doctor, nurse and teacher
8) Fieldwork	Observing or monitoring the operation in the workplace for a short time	Social worker, science and geography
9) Post-course Internship	Reinforcing the work experience after theoretical learning	Doctor and lawyer

Source: Sumet Yamnun, 2004, p. 23.

There are four forms of WIL in Thailand (Office of the Education Council, 2009b, pp. 108-115) as follows:

1) DVT is an education management. It is emphasizing on theoretical study in school and on practical training in establishment. Students will get knowledge coupled with working experience and the specific professional expertise in a defined level. It is under the VEC and there are both vocational and diploma certificates provided.

2) Cooperative is a studying management. It emphasizes on real practice in establishment systematically and there are education and essential skills while working in establishment provides. Students are like as temporary officer who must perform the real work in the filed that they study and there is systematical evaluation including real experience reports. It is a university education and students must perform real work in establishment for a semester or at least 16 weeks.

3) Apprentice is a studying management in Diploma and Graduate Certificate. Every student must train in establishments or resources and can train in one or many establishments as appropriate. It is under the VEC and community colleges.

4) Internship is a studying management in Degree. It emphasizes on Capacity-Based Learning that is students have academic knowledge and professional expertise and ideal in professional specialty. It aims at producing personnel in deficient and necessary professional specialty fields such as doctor, teacher, nurse, policeman, soldier, and pilot etc. It also produces personnel with academic knowledge and professional expertise with curriculum and learning process emphasizing on intensive practice and training. The period of education is not less than five years.

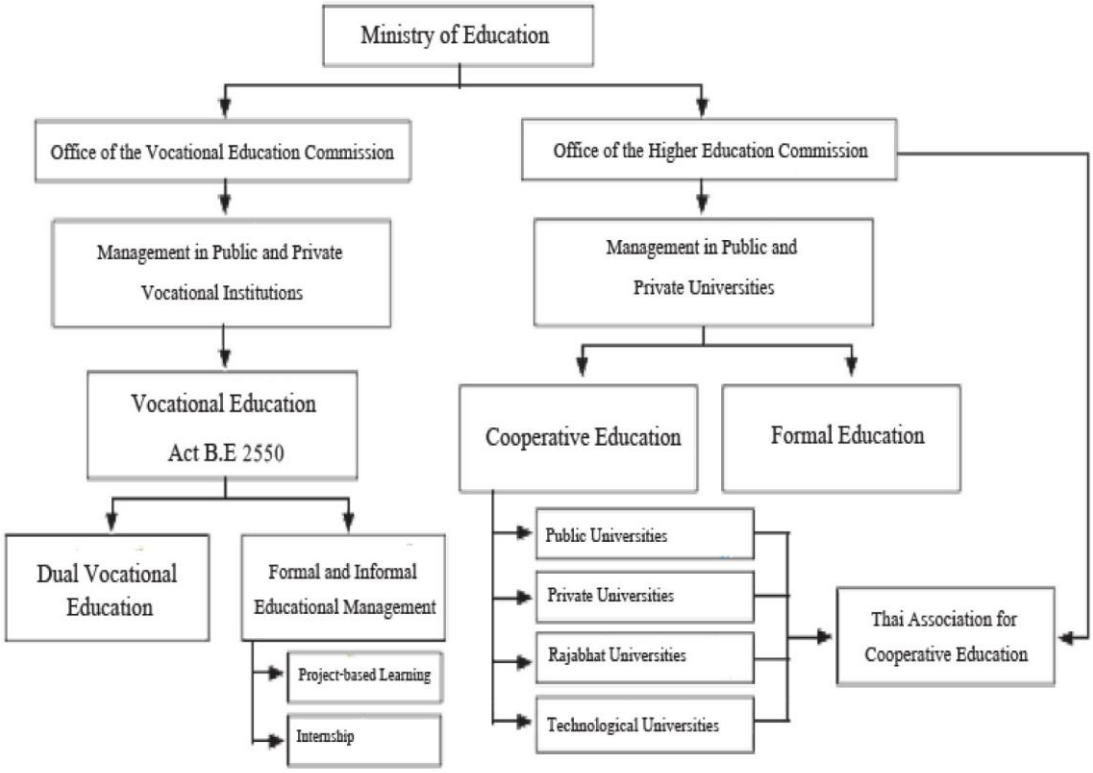

Figure 3.6 Education Agencies in Work-Integrated Learning Management
Source: Office of the Educational Council, 2009b, p. 12.

In this part, it can be concluded that although cooperation between public and private sector in education management should be supported and operated greatly, especially vocational education which has basic principles connecting with training in establishment and potential development ways of moderate labors who are facing with problem of severe shortage both in qualitative and quantitative, this part of cooperation does not get much attention and operate seriously. It has just cooperated loosely in accepting students to train in the project "School in Factory" or some establishments have participated in DVT (will be mentioned further in Chapter 5). However, from the study in this part, it reflects the importance of cooperation between public and private sector in education to increase capacity in competition of overall country. It can be said specifically that cooperation between public and private sector does not only solve the problem of moderate labor shortage in industrial sector and uplift the quality of workforce, but is also beneficial to moderate labor production

planning in the long run. It opens the chance for private sector labors to participate in education management to meet labor market demands. At the same time, the government knows the industrial sector information and can determine the direction in developing the country clearly and in accordance with real demand situation.

3.1.3 Concept of Skill Formation

In this section, the researcher will mention about the skill formation system in the advanced industrial countries as presented in "The Political Economy of Collective Skill Formation" by Busemeyer and Trampusch (2012). Building on the firm-centered perspective, they distinguish between the liberal solution of narrow on-the-job training, the segmentalist solution of self-regulation, the statist solution of state-run training, and finally, the collective solution where firms, associations, and the state collaborate in providing and financing skills. (Busemeyer & Trampusch, 2012, pp. 11-12) The last model is the dual vocational training system which is one of the solutions of semi-skilled shortage in Thailand.

They argue that there are two dimensions of variation that are helpful in describing the variety of skill regimes: the first dimension is the degree of firm involvement in the provision of initial vocational training. This dimension pertains to the willingness of firms to invest in skill formation, in particular initial vocational training. A higher involvement of firms in training might imply a specificity of training, but it is important to keep in mind that a strong commitment of firms to skill formation also means that firms are willing to invest in skill that are polyvalent and thus potentially transferable to other context. (Busemeyer & Trampusch, 2012, p. 12)

While the second dimension is the degree of public commitment to vocational training. This dimension captures various aspects: state subsidies to vocational training and public policies which monitor skill formation by certification and standardization and by formulating occupational training profiles. With this dimension, they also include the degree to which the institutional set-up of the educational system acknowledges and supports the existence of VET as a viable alternative to academic higher education (Busemeyer & Trampusch, 2012, p. 12)

Then, they end up with a 2 x 2 matrix that captures the variety of training regimes (see Table 3.5). Firstly the liberal skill formation systems, skill formation is

largely provided through markets and in the general education system. In countries such as the United Kingdom and United State, the general education system provides individuals with generic educational qualifications that are often complemented with internships and summer jobs during the phase of education and followed by more specific on-the-job training in the first stage of employment careers. Although high schools have vocational tracks, their status is regarded as inferior in comparison with the academic tracks that prepare for admission to college. Vocational skills of higher quality are provided in community or vocational colleges, which have limited institutional linkages to the labor market and require students to pay tuition fees. In this system, it therefore needs some i-firm practical training and there are few apprenticeships. (Busemeyer & Trampusch, 2012, pp. 13-45)

Table 3.5 The Variety of Skill Formation System in Advanced Industrial Democrecies

Public commitment to Vocational training	**High**	**Statist skill formation system (SW, FR)**	**Collective skill formation system (GE,..)**
	Low	Liberal skill formation system (US,IR)	Segmentalist skill formation system (JAP)
		Low	High
		Involvement of firms in initial vocational training	

Source: Busemeyer & Trampusch, 2012, p. 12.

Next, Japan is a prominent case of a segmentalist skill formation regime. In this country, the institutional setup of the general education system is quite similar to that in the United State. The difference to the liberal skill regime is that the willingness of firms to invest in the formation of their employees' skill is much higher. A sizable share of a typical youth age cohort enters the internal labor markets

of large firms immediately after leaving the general school system and subsequently undergoes an intensive process of skill formation that entails job rotation schemes and off-the-job training course in in-house training centers and vocational school. In this system, the apprenticeship by firms is more important than vocational colleges. (Busemeyer & Trampusch, 2012, pp. 13, 45)

The statist skill formation system is best exemplified by the Swedish or French educational system. In contrast to both the liberal and segmentalist skill regimes, public policy makers are much more committed to supporting VET as a viable alternative to academic higher education in order to promote the integration of young people with weak academic qualifications into education and employment. In Sweden, this high level of commitment is also expressed through a systematic integration of vocational training with active labor market policies and further training. In order to promote educational mobility, VET is fully integrated into general education system, which allows and encourages people with vocational qualifications to pursue tertiary education. As a corollary, the involvement of employers in the process of skill formation is very limited, although policymakers have repeatedly tried to expand the workplace-based components of vocational training. In this system, there are some apprenticeships for highly skilled workers. (Busemeyer & Trampusch, 2012, pp. 13-14, 45)

Finally, the authors highlight the characteristics of collective skill formation regimes. Collective skill regimes occupy a special position in the comparison of skill regimes as they are characterized by a strong commitment of both the state and firms to invest in formation of vocational skills. To compare collective skill regimes with the other types, this distinctiveness becomes apparent because the dimensions of firm involvement and public commitment to training are often in conflict with each other. In the segmentalist skill regime, the high commitment of employers to skill investments goes along with a strong reluctance of the state to interfere in training policies of firms. While, in the Scandinavian countries, the dominance of the political force of social democracy resulted in a strong public commitment to vocational training, which in turn contributed to the marginalization of the role of employers in initial vocational training. The collective training, however, combine strong involvement of firms in training and high public commitment of the state to support

vocational training. In this system, there is dual system of schools and apprenticeships. (Busemeyer & Trampusch, 2012, pp. 14, 45)

In the collective training regimes, there are four characteristic particularities. First, there is a high involvement of firms in the provision and administration of vocational training. A high share of firms is willing to shoulder a sizable burden of the cost of providing initial vocational education. (Busemeyer & Trampusch, 2012, p. 14)

Second, the intermediary associations such as employers' associations and-to a varying degrees-trade unions play an important role in the administration and reform of collective training systems, which implies a specific division of labor between the state and associations. State actors refrain from intervening too much in the day-to-day organization of training and delegate important obligations to semi-public bodies such as chambers of industry and commerce or tripartite committees concerned with monitoring the implementation of training profiles and updating profiles to changing skill demand. Streeck and Schmitter have pointed out that these "private interests governments" are superior to state bureaucracies or market mechanism in enforcing training standards, because they involve all major stakeholders. (Busemeyer & Trampusch, 2012, p. 14)

Thirdly, the system provide portable, certified occupational skills that are standardized and full recognized on national labor markets. This means that the leeway of firms in determining the content of workplace-based training is limited by the necessity to confirm with national standards. However, the breadth and portability of occupational skills ensures union support of apprenticeship training, because the preservation of labor mobility is an important power resource for unions. Also, at least some employers, in particular the small- and medium-sized firms, benefit from the existence of external occupational labor market. (Busemeyer & Trampusch, 2012, p. 15)

Fourth, VET takes place not only in schools but also in companies. This is usually done in dual training or apprenticeship schemes. These schemes combine practical learning at the workplace in the firm with theoretical education in vocational schools or colleges. The apprentice is not regarded as a student, but as a (paid) employee of the firm. (Busemeyer & Trampusch, 2012, p. 15)

Despite, all countries belong to the group of collective skill formation system such as Germany, the Netherlands, Denmark, Switzerland and Austria, have a

number of commonalities, however, there are important differences. The editors play more attentions on the political history of skill formation systems which usefully explain the emergence of differences. The political struggles over the design of institutional arrangements led to the formation of different development paths within the group of collective training systems. Essentially, what is at stake is the degree to which the interests of employers, the state, and (increasingly over time) the unions prevailed at specific moments in the development of training systems. (Busemeyer & Trampusch, 2012, p. 15)

Then, the editors explain which casual factors determine the extent of firm and state involvement in VET? Firm involvement is largely influenced by the ability and willingness of firms and employers to coordinated with each other, or "logic of membership". When coordination among employers is high, firm are more willing to invest in skills, because the danger of poaching is much reduced. Also, public and social obligations reinforced by intermediary associations encourage firms to participate in collective schemes such as apprenticeship training. As a consequence, they argue, political conflicts about the extent of firm involvement in VET will largely be shaped by the characteristics of firms and cleavages within the employers' camp. The other dimension, the extent of state involvement is related to characteristics of the state, trade unions, and the balance of power between business and labor, or "logic of influence". With regard to the collective skill formation, the dimension of firm and state involvement are also related to the neuralgic points of contention including who controls? who provides? who pays? and relationship of training to general education which lie at the core of political struggles over firm involvement and role of the state in collective skill formation system. (Busemeyer & Trampusch, 2012, pp. 21-22)

From this follows that there are four political arenas, in which political conflicts about the design of training institutions played out. The first arena is the logic of membership and the latter arenas belong to the logic of influence. In line with the historical-institutionalist tradition, they focus on the outcomes of political struggles between important stakeholders and relevant political actors in the continuous process of designing and redesigning the institutional frameworks of skill formation systems. (Busemeyer & Trampusch, 2012, pp. 11, 22)

1) The Characteristics of firm and the balance of power between different “fraction of capital” within the employers’ camp, or cleavages within the camp of employer. The conflict over skill formation plays out between the industrial and craft sectors put skill formation systems on very different development paths. Historically, apprenticeship training is rooted in crafts sector. At some point in the development of training systems, the question arose whether the craft-based model of skill formation should be extended to other sectors of the economy, should remain confined to the crafts sector, or should potentially wither along with the traditional organization of artisan trades. In case of the United Kingdom, but not in the group of collective skill formation system, the question was more whether apprenticeship training would remain confined to the traditional sectors of the economy or whether the industrial and crafts sectors would coordinate to develop a common framework for apprenticeship training within varying degrees of flexibility for the establishment of sector-specific institutional arrangement. All collective skill formation systems have found a way to coordinate different employer’ interests via intermediary associations. However, the specific outcome of this coordination of interests depends on the distribution of power between the industrial and the crafts sectors, between large firms and SME, as well as between the export-oriented and the domestic sectors of economy. (Busemeyer & Trampusch, 2012, pp. 22-23)

2) The power politics within the trade union camp. Historically, the distinction between crafts unions and industrial unions is crucial. Powerful crafts unions used apprenticeship training to limit the access to skill trades. As a consequence, the question of skill formation was contested across the class divide, which then prompted employers to minimize their dependence on skilled labor and ultimately contributed to the decline of apprenticeship training, as happened in the United Kingdom. In contrast, strong industrial unions have been identified as important stakeholders in collective skill formation system. However, it is necessary to emphasize that, in the initial stages of the development of these systems, the involvement of unions was actually quite limited and they were not necessarily in favor of dual training. (Busemeyer & Trampusch, 2012, p. 24)

3) The overall balance of power between business and labor. Employers defend their autonomy in the provision and implementation of training,

whereas labor strives to impose external constraint. Employers prefer to invest in firm-specific skill, whereas industrial unions demand investments in polyvalent skills as well as the authoritative certification of these skills so that workers can also employ these in other firms. This conflict of interests about the scope and content of skills to be provided in firm-based training carries implications for the design of training institutions. (Busemeyer & Trampusch, 2012, pp. 24-25)

4) The dynamic of partisan competition and state structures. The state and political parties are decisive for two reasons. For one, the establishment of educational systems, be they oriented towards vocational training or general education, matters for process of state formation. For another, the state and political actors intervene in social conflicts as partisan policymaker. (Busemeyer & Trampusch, 2012, p. 25)

Table 3.6 Variations in Vocational Training System

	Firm involvement low	Firm involvement high
	School dominant; apprenticeship play a supplementary role	Apprenticeships dominant; schools play a supplementary role
State commitment low	Great Britain, United States	Japan
Noncertified, non portable skill	General skill/education Some in-firm practical training Few apprenticeships	Segmentalist system
State commitment high	France, Sweden	Germany
Certified, portable skills	School Dominant; some apprenticeships for highly skilled workers	Dual system of schools and apprenticeships Denmark

Source: Busemeyer & Trampusch, 2012, p. 45.

Summing up, they identify four neuralgic points of conflict over the design of training institutions: the relationship between firm autonomy and public monitoring, the relationship between firm-based and school-based VET, the financing issue, and the relationship between vocational training and the general education. Furthermore, building on the differentiation between logic of membership and the logic of influence, they argue that the politics of collective training systems are determined by the specific shape of cleavages and their representation via intermediary associations within the employers' and trade unions' camps, respectively, by the overall balance of power between business and labor, and by the dynamic of partisan competition and state structures. Thus, different "settings" in these political and institutional variables during specific periods of time can explain the emergence of different trajectories within the group of collective skill formation systems. (Busemeyer & Trampusch, 2012, p. 27)

Meanwhile, this affects to categorizing the skill sets. As mentioned by Wolfgang Streeck, asset theory's identification of specific with low and general with high skill is exactly the opposite of the classic distinction in Anglo-American labor market regime between unskilled general worker and specialized craft workers. It also differs, in the same way, from the traditional "German" distinction between the specialized and high occupational skill of Facharbeiter, and the general and low skills of workers without a certified Berufsausbildung. (Busemeyer & Trampusch, 2012, p. 332)

The Human Capital Theory define general skill that are broad and portable, and specific skill that are not portable. On the other ways, in the asset theory's view, general skill has substantively broad, and specific skill has not portable. While, Iversen and Soskice define "general" skills, in addition to being economically portable and substantively broad, as requiring high, in the sense of academic, education. Specific skills of non-academic occupational kind that are non-portable, specialized, and low, and general skill that are portable, broad, and high, as most typically embodied in academic professional skills. Therefore, if we use asset theory, we will not be able to realize on both unskilled labor such as the unskilled labor in the United State. (Busemeyer & Trampusch, 2012, p. 332)

Table 3.7 General vs. Specific Skill: Alternative Meanings

	General	**Specific**
Anglo-American labor market regime	unskilled	Craft
German vocational training regime	Low and uncertified (Ungelernt)	High and occupational (Facharbeiter)
Human capital theory	Portable	Not portable
Asset theory	High and broad: professional	Low and narrow: occupational
Class theory	Low and easy to replace	High and difficult to replace

Source: Streeck, 2012, p. 332.

On the other hands, this is, incidentally, different in a competing class theoretical schema of work skills which, unlike the "asset theory," emphasizes the dependence of employer on the worker rather than the other way around. Here, general-in-the-sense-of-unspecific skills are easily replaceable by the employer, which is typical of low skills, while specific skills are difficult to replace, which is characteristic of high skill. Workers owning specific skills are correspondingly considered to be in a strong position in labor market comparable to traditional craft worker, like in in Anglo-American labor market regime. (Busemeyer & Trampusch, 2012, p. 332)

From the above, not only does it show the formation of skill production in many countries, but also it does show the clearly successful conditions of cooperation between public and private sector in producing skill in advanced industrial countries, especially setting of industrial technician production system in relation to social context of each country and interaction between the roles of government and business sector. It affects labor skill in that society, especially the roles of central association or Guilds in the past which had developed for a long time in European countries and been the pillar for skill guarantee, or in the case of America which has passed the

production system of Fordism which does not need a high quality of labor. However, the previous study causes the question whether the management of DVT of Thailand (clings on Model of Germany) is appropriate or not and how. Due to the fact that Thailand does not have a professional association to be the representative of industrial technician professionals and supervisor of skill standard, most of Thai industries are small and medium sized enterprise. Although there are many countries accomplishing in adapting that kind of form to use such as South Korea and Taiwan, remember that the two countries began to use it in Authoritarianism.

3.2 Related Researches

3.2.1 Thai Research

Research related to vocational education management in Thailand consists of three main groups: Policy Implementation Research, Public Private Cooperation in Vocational Education through DVT, and Vocational School and Establishment Cooperation in Industrial Technician Production in Thailand Research. The details are as follows:

Policy Implementation Research such as Arkom Jaikaew (1990), Kla Thongkhao (1991), Thongbai Sudcharee (1993), Kanuengnit Duangjit (1998), Ratchanee Yampracha (2001) and Nopparut Saksiri (2007). The details are as follows:

Arkom Jaikaew (1990) studies factors that affect the success of Thai-Muslim in southern border provinces education promotion policy implementation. It is an education comparing between the project's location and use of Woradet Jantaradet Model as research frame that is rational model, management model, and general model. Rational Model has important independent variables which are people's demand factor, local leader support and people's reaction to government officials. The second factor is the community factor specifying only faith in culture. Management Model has important independent variables which are 1) Policy Factor specifying at clearness and accordance with problem condition 2) Organization Factor specifying at coordination and support from higher agencies 3) Resource Factor specifying at budget and number of personnel 4) Area and Mutual Information Factor 5) Government Official Factor: From the first model in the quantitative studying, the

community factor and the people factor are related to success in attitude and behavior. The second model, government official and budget factor, is related to policy implementation success. The conclusions from using the two models in studying are Community Factor at faith in culture. Policy Factor and Lower Level Government Official Factor are related to policy implementation success. Lower level government officials are the policy connector who connects the policy to implementation in the area concretely. If the government officials lack determination and do not have skill in professionals or cannot adapt to the area, though the policy has clearness in accordance with the problem and the culture of area, finally the policy may fail.

Kla Thongkhao (1991) studies about "Analysis of factors affecting policy implementation success: the case study of campaign policy for national book learning" by using Woradej Chanthornsorn Model i.e. Rational Model and Management Model. He uses the model factors to integrate to be the way in studying. It can be concluded to five independent variables as follows: policy goals and objectives, mission specification and assignment, characteristic of agency implementing the policy, central and local support, and control measurement, evaluation, stimulation and promotion. The research results are 1) All independent variables have positive relationship with policy implementation success 2) Independent variables that have an influence in dependent variables the most and the second all through the least are central and local support, mission specification and assignment, characteristic of agency implementing the policy, control measurement, evaluation, stimulation and promotion, and policy goals and objectives. From this research, the researcher has proposed that a successful policy implementation needs nine strategies as follows: 1) publishing strategy 2) leader and authoritarian support strategy 3) organization management and coordination in descending order from national to local 4) training meeting or problem seminar strategy 5) work manual strategy 6) leader selection strategy 7) strategy of visiting operators in the area 8) inspection control supervision and evaluation strategy, and 9) strategy of reward and award to excellent operator

Thongbai Sutcharee (1993) studies The Teachers College Policy Implementation: A Case Study of the United Colleges of Southern Isarn. The Objectives are to study the influential factors affecting the success of the teachers college policy implementation and to study the characteristics of the teachers college policy

implementation. Policy variables which are resources, disposition, political support, communications and leadership have correlation with The Teachers College policy implementation and The Teachers College policy implementation is successful in medium level except the research that is not successful.

Kanuengnit Duangjit (1998) aimed at investing factors affecting the success of manpower policy implementation, this study focuses on the ceases of four ministries, which directly provide public services; the Ministry of Education, Interior, Public Health and Agriculture. It is hypothesized that; 1) To raise their legitimacy and popularity under the parliamentary system and the bureaucratic centralization, politician have to rely mainly on the government agencies in their policy implementation. This bureaucracy-downsizing policy, therefore, has not been fully supported by them and as a result lacking clear direction. 2) Impact of the manpower policy bring about a strong resistance from the agencies. To protect interests in terms of position, authority and budget they use their public service duties as pretext for maintaining the status quo. 3) Collusion between politicians and government officials under the existing political and bureaucratic structures results in a successive failure to implement the policy. The study finds that the policy clarity is not a factor impeding the policy implementation. However the resistances of the government officials in the four ministries who base their excuse on performing public-service duties and implementing other policies and consequently lack of cooperation from not only them but also politicians have made the implementation of manpower policy ineffective.

Ratchanee Yampracha (2001) seeks to find out factors that account for the delay in implementation of educational reform policy. The findings are as follow; 1) political factors; educational reform policy had been initiated by the former government, therefore it has not been given high priority by the current government. Secondly, under the [resent government the position of the minister of education had been assumed by three persons already. Finally, there is a conflict between the current minster and heads of other related agencies regarding the meaning of educational reform. 2) Opposition by stakeholder; Educational reform policy was opposed by high ranking government officers because they fear their interest would be shaken. 3) Policy ambiguity; The government stated in parliament that it will implement its

educational policy in compliance with the National Education Act B.E. 2542. However, there are several contenting and contradicting proposals that make clarity an impossibility. 4) Inadequate resource; Educational reform requires a large budget. Though scholars and practitioners agree that it is a worthwhile undertaking, however, resource are inadequate. 5) Leaders; Scholars and the public criticize that the prime minister and minister of education are not sincere in seeing this policy implemented. 6) Coordination; There are several coordination problems between several actors: the Minister and the Office of Education Reform; policy units and implement units; and among implementation units themselves.

Nopparut Saksiri (2007) studies on "an analysis of factors related to the success of educational information and communication technology policy implementation in basic education institutions. The conceptual framework of the research was based on the models of Van Meter and Van Horn and Mclaugnlin. With the qualitative and quantitative methods, he found out that there are five factors related to the success of policy implementation that are 1) the disposition of implementation 2) the officials of institution the social environment 4) the organization's resources 5) the standards and the objectives of the policy 6) the communication and 7) the political environment, respectively.

For Public Private Cooperation in Vocational Education through DVT such as the research of Kwanchai Sinthipsomboon (1994), Surasak Thanuthong (1996), Amnuay Nakthat (1997), Worawit Sritrakoon (1997), Arunkaew Leethumchayo (1998), Mayura Sripongwiwat (1998), Ruangwit Posoongnern (2006), Pittaya Chinachitpan (2002), and the latest research of Thanin Srichompoo (2014) The details are as follows:

Kwanchai Sinthipsomboon (1994) studies school and establishment cooperation in delivering Vocational Diploma students Major Automotive Mechanic. It found that school and establishment cooperation should be arranged in the project and should have working committee or the board. It should consist of representatives from both sides to write the curriculum, choose the establishment, and determine the budget and clear responsibilities of both sides to supply enough equipment for training and let school teachers practice how to use the equipment and tools in the establishment. Besides, teachers should evaluate academic results while the establishment evaluates working skill.

Surasak Thanuthong (1996) studies the problem of DVT progress in Vocational Certificate Major Electrician: The Case Study Nakhonpathom Technical College and Petchaburi Technical College about the generality in economy, society and politics, studying process and desirable characteristics of DVT graduates. It found that DVT curriculum will be accomplished depending on six factors as follows: 1) Economy consists of the province's location (near Bangkok), the sufficiency of number of factories, the readiness of public utility, transportation convenience and high GPP 2) Society consists of characteristics of industry, good attitude to the curriculum, a lot of further studies, a lot of labors, low unemployment and high income 3) School consists of the carefulness and the interest of director and DVT chief such as curriculum improvement, basic knowledge of student consideration, budget from others i.e. income from parents' association, including various forms of public relations 4) The establishment consists of the sufficiency of number of establishments, high demand of electrician trend, and training provides. 5) Parents consist of DVT understanding, parents' support in DVT and parents' cooperation in the meeting to solve problems and 6) Students consist of high responsibility and sufficiency for arranging DVT.

Amnuay Nakthat (1997, p. 89) studies Rayong Technical College DVT Development. He found that if the curriculum is efficient, it will make public and private sector cooperate together, and schools and establishments have more understandings in their roles and operations. It can solve the establishment's problem in the way that the establishment provides students the work that does not cover all main substances in the curriculum. Personnel development in the establishment should be realized about teacher, work's attitude, good creativeness, teaching sacrifices, sufficient budget development, operation convenience and establishment coordination including public relations development. Therefore, DVT will be more popular among locals especially the target group. Moreover, it promotes the correct understanding and causes good attitudes towards society.

Worawit Sritrakoon (1997) studies the establishment's opinions in DVT Major Automotive Mechanic in North Eastern Technological College. He found that the overview of research is in the opinion level that highly evaluates in every side. Each side can be considered as follows: planning and preparedness in opinion level and

high evaluation: the establishment understands its roles and duties to DVT students' trainings. It determines the personnel or performs as the training controller of DVT students appropriately. It also evaluates about Cognitive Domain, Affective domain and Psychomotor Domain. The highest opinion level is the establishment gets benefit from student training and basic knowledge preparing before training. Students can develop their own skills, have human relations with their colleagues and have ability in skill development in training.

Arunkaew Leethumchayo (1998) aims to study the state and problems of the operation of Dual Vocational Training Program in institutions under the Jurisdiction of Technical College Division, Department of Vocational Education in the Eastern Seaboard Development Area. The research findings were as follow: 1) At the preparation stage. The Dual Vocational Training Program and the operational plans were arranged. The meeting were held in order to promote understanding among the personnel concerned. Public relations related to Dual Vocational Training Program was organized in both institutions and enterprises. The problems founded were few enterprises joined in the programs; There were lower number of students than the set goal; Public relations activities were uninterested and also insufficient budget. 2) At the operation stage. The committee of Dual Vocational Training Program was appointed by institution administrators by consulting with enterprise administrators. Meetings were held for committee regarding steps of the program. The application was conducted by the institutions while the selections were held by the enterprise. Enterprise selected the representatives of teachers of apprentices to attend the meeting and seminar of instructional supervisors and teachers of apprentices. An orientation for the students of Dual Vocational Training Program was conducted by the institutions. Institutions were responsible for the enrollment of students and the registration of students for a course, while enterprises provided apprenticeship contract. The problems founded were institutions had insufficient amount of personnel; teachers had heavy teaching loads; the number of students did not attain the target; instructional supervisors did not perform regularly; and less cooperations from enterprises. 3) At the follow-up stage. Instructional supervision was conducted by the institutions together with enterprises. Problems reported were lack of transportation, heavy teaching load among instructional supervisors, and evaluation results were late submitted

Mayura Sripongwiwat (1998) emphasizes to study the problem occurred in the colleges where carried out the Dual Vocational Training (DVT) system in certificate of Vocational Education curriculum B.E 2538 of Industrial, Trade in Technical college group in Northern Region of Thailand as the following: To prepare how to manage DVT system in the college; To carry out DVT in the colleges and to access the effects of proceeding and occupation training, and to compare the problems occurred in the colleges where using DVT system related among administers and instructor. The results are as follow; 1) problems concerned with the colleges using DVT system in certificate of Vocational Education curriculum B.E 2538 of Industrial Trade DOVE. This research found that the problems of insufficient radiness of the local factories, lack of managing DVA training for the personnel of the local factories and too much teaching load and activities of the personnel in charg, were at high level. The problem on proceeding DVT activities were at high level, particularly the problem on arranging the budget of the institute such as lack of budget in vehicle expenditure, training materials and equipment and go on. Besides, there were some problems on providing suitable time and allowance on supervision affairs, activities which supplement such a type of DVT curriculum in order to cover and complete this curriculum. However, the other problem which was important was, the colleges never survey or inspect the DVT students in the local factories whether cover or complete or not. Another one was the lack of inadequate understanding concerned with the personnel in local factories on the principal and criterion of learning evaluation and the items of occupation training carried out in local factories. 2) the comparison between the opinions among the administrators and instructors about the problems of providing DVT curiiculum in the colleges mentioned throughout three sides weremconcluded that the administrators and instructors opinion were not different. .

Ruangwit Posoongnern (2006) emphasizes to follow-up the state and problems of the organization of the higher vocational certificate curriculum B.E. 2546 in a prototype project of technician production for industry, The Vocational Education Commission. The subject consisted of four colleges that attend the project by which data were gathered from project counselor, college administration, teachers and private sector personnel. His findings were as follows 1) At the preparation stage, the curriculum implementation was planned with composed of the personnel preparation,

teaching plan, educational resources and materials, student selection plan, training plan, measurement and evaluation plan, competency test and public relations activities. The problem encountered were teacher teaching load, private sector personnel had insufficient time to take care of student and the difference of working culture between private sector and college. 2) At the operation stage, colleges improved competency based curriculum by selecting occupation in which match to the higher vocational certificate career. They analyzed the competency and set up the qualification techniques, compared them with the present curriculum. The techniques beyond, they integrated them to the local vocational curriculum. The teacher preparation done by training on the teaching methods and student center teaching plan. The private sector personnel had trained on teaching skill. College also had planned on varied teaching methods. They encounter insufficient time to improving competency based curriculum. They were lacking of educational resources, training resources and durable activities. Most of the materials they have did not associate with industrial need. 3) At the evaluation stage, the evaluation done by project counselor. They follow up every stages, improved and reported to Siam Cement Public Co., Ltd. The follow-up study showed that most of stages in the project were done as specify in a master plan.

Pittaya Chinachitpan (2012), aims to develop the model for Dual Vocational Training (DVT) development on Industrial Trade program. The data were obtained from 88 samples including teachers in the colleges under the Office of Vocational Education Commission, and trainers in the industries. Then a training module was developed and tried out with 32 samples. The model, comprising a training module and three supporting components were implemented with 80 participants encompassing colleges administrators, industrial managers, DVT trainers and trainees. The six phases of the designed module cover the sections on principles, vocational training plan, teaching practice, testing and evaluation, preparation and monitoring, and DVT networks along with three supporting components, i.e. the centers of network, training and services. After the try-out with colleges participating in the pilot project, the participants revealed a remarkably high level of satisfaction on the developed program.

Thanin Srichompoo (2014) aims to develop an administrative model for Dual Vocational Training under Vocational Education Commission. The results of the research were as follows: 1) The administration for Dual Vocational Training in educational institutes under the Office of Vocational Commission consists of four main components: inputs, process, outputs and conditions for achievement. 2) The administrative model constructed for Dual Vocational Training in educational institutes under the Office of Vocational Commission consists of five main components as a mechanism to achievements: (1) the executive committees of Dual Vocational consists of two elements with (a) the executive committees of Dual Vocational Training (b) the seven duties of executive committees of Dual Vocational Training (2) framework with a mission work of the six missions (3) process with seven administrative principles: planning, organizing, leading/directing, doing, controlling, and acting (4) three student's vocational competencies (5) condition for achievement contributing to the successful management of Dual Vocational Training. 3) The evaluation of the constructed model for Dual Vocational Training in educational institutes under the Office of Vocational Commission yielded the results as useful at a high level and the high feasible.

For the last set of research is ones which studies the cooperation between the colleges and the firms in industrial technician production including Luechai Kaewsook (2011) and Nipon Poapongsakorn et al. (2011) as the following:

Luechai Kaewsook (2011) aims to 1) study current state of vocational education institution to meet manpower demands of the enterprises. 2) study the enterprise's manpower demands in education zone. 3) develop management strategies of vocational institution to meet the manpower demands of enterprise. The research found that (1) Regarding to current state of vocational institution of the manpower produce's implementation. The first priority had to develop was the laboratory that support from enterprise. Budget management and preparing specialist teacher; Evaluation to comply with the manpower produce's implement plan should be develop between vocational institution and enterprise. Inform evaluation result of manpower produce both of quantity and quality. The evaluation result of manpower producing plan should be continuous improvement. (2) Requirement of enterprises were Technical skill in priority and follow with Cognitive skill and Behavior skill. (3) Strategies for vocational administration this study found three principle strategies nine

subordinate strategies and 19 processes as detail : 1) Approach manpower planning strategies with (1) create approach plan (2) provide success indicators (3) provide time frame for plan adjusting 2) Implementation plan by three parties strategies with (1) information by three parties. (2) skill development by three parties. (3) manpower produce by three parties 3) Paradigm shift evaluation method strategies with (1) Continuous external efficiency evaluation (2) Take feedback to adjust performing (3) report working information after by alumnus.

However, the research of Nipon Poapongsakorn et al. (2011, p. 40) about Connection between Schools and Labor Market: Graduate Quality and Quality Labor Shortage, he indicates that aside from the three forms (i.e. Formal Education, Non-Formal Education and DVT) of vocational education management in the Vocational Education Act, in practical there are several kinds of vocational education management that the private sector has participated in. It is classified by cooperation level that is if using the institutional principles, there are two principles which are 1) private sector's roles in education management and 2) training intensity. Private sector's roles in education management can be divided into four forms which are 1) Under Private Sector Patronage College 2) Industrial Sector Leader College 3) Loose Connection Private Institutes and 4) Disconnection Private Institutes. The second principle, training intensity, provides different points of view. It is the consideration from characteristic of skill that students receive. It is the education system that emphasizes on building "specific skill". From the latter principle, vocational education management can be classified to three types i.e. 1) firm specific skill (work-based) 2) industry specific skill and 3) vocational skills. The details are in Table 3.8.

Table 3.8 Institute Allotment with Private Sector Participation

Institutional Criteria	**Vocation Colleges**
1) Privte Role	
(1) Private support/Owner	Mabtaphud Technical College (V-ChEPC), Panyapiwat Technical College (PTB)
(2) Lead by Industries	Nakornsrithammarat Seaboard Industrial College

Table 3.8 (Continued)

Institutional Criteria	**Vocation Colleges**
(3) Partly Cooperation with Industrial Sector	RayongTechnical College, Hatyai Technical College, etc.
(4) General Management under the Scheme assigned by the VEC.	Public and Private Technical Colleges
2) Training Intensives	
(1) Apprenticeship, firm specific skill	Panyapiwat Technical College (PTB), Nakornsrithammarat Seaboard Industrial College
(2) Work based, industry specific skill	Mabtaphud Technical College (V-ChEPC)
(3) Vocational skill	Public and Private Technical Colleges

Source: Adapted from Nipon Poapongsakorn et al., 2010, p. 40**.**

Although the principles above can analyze the forms of private sector participation in vocational education in Thailand systematically and intensively, considering from DVT principles and procedures, it is overlapping in the connection (loosely) between the private sector and the VEC general curriculum. Therefore, it directly affects the training intensity. By the philosophy of vocational education, there must be the practical training included whether in the school or establishment. When the government's policy supports to arrange DVT as appear in the Vocational Education Act B.E. 2551 (2008) and then the VEC announces DVT in 2015 without forcing that every school has to arrange DVT, so it makes the classification above ambiguous. As in the case of Rayong Technical College and Hatyai Technical College, It is the cooperation with Cement Thai Company in SCG Model School in DVT and five years at a time contract in Vocational Diploma Major Electrical Machine and Manufacture Industry. Therefore, the skill that students in the project receive will be different from general students and it is a firm specific skill because it takes time in the training.

Today the VEC can arrange both regular and DVT curriculum. Therefore, if the school arranges DVT, the students can get firm specific skills as well. However, it may not be so intensive as the two colleges previously because Cement Thai Company production system has higher exclusivity and more complicated technology than other companies in the same industrial group. Although students who participate in this project will get a job immediately after graduating and will get more pays than any other Vocational Diploma student in general, the question will be how specific the intensity level is and whether it will affect labor potential development and job transferring or not. The issues are parts of the weak points of Segmentalist Skill Formation Regime of Japan.

However, from the principle about the intensity training above, it reflects some limitations of private sector participation in vocational education management because of the budget, administration, and vacancy. Besides, the specific skill to respond industrial demands may affect the skill uplifting in the whole system because most of the industries in the country (small and medium sized enterprises) need basic skill widely and work on machines more than line operation. In the meantime, it reflects another issue that is with the fast change of production technology, labors have to have more multi-skill and soft-skill. The government itself cannot handle it.

The last research is belong to Duangnapa Mogkaranurak (2011) which studies the scenario of Vocational Education in Thailand during the next decade (2011-2021) by using the methodology of Ethnographic Delphi Futures Research (EDFR). The results are that Vocational Education in Thailand within these 10 years will face of many importance issues such as Globalization, the trend of competitive advantage in worldwide and Free Trade Area, especially ASEAN Community that will be start in 2015. Skilled worker will be able to move from country to country so Thailand has to prepare Thai people by improving Vocational Education for the future change. Moreover, the researcher found that within these 10 year, there are eight trends of VE should be improved 1) The characteristic of graduate should have occupational knowledge, occupational skills, good communication, responsibility and accountability, proud and have a good attitude to their job, love and loyalty to their organization, and should have life skill such as teamwork, leadership, live and work with others. 2) Teaching and Learning should be flexible to students, private sector and technology.

There are variety of studying such as Dual System, experience transferred system and e-learning. 3) Teachers should know all of their students individually so that introducing a suitable occupation to each student. Teacher should have a good experience, good knowledge and good skill in occupational subject that they teach 4) VE has to cooperate with all involving sectors, especially private sector in order to produce the characteristic of graduate to satisfy them. 5) Having the organization to set up the VE standardizations. The VE standardization will determine the level of each occupational skill and the wage of each level. 6) Government should subsidize the budget and policy to VE continuing. 7) All sectors-Medias, government, private sector and social-should push the value of studying in VE. 8) It should be decentralization and implement the program of tertiary in VE. In conclusion, all involving sector in VE should be strong cooperate in order to produce and improve the quality of Thai worker in order to get a worldwide competitive advantage.

From the previous researches that related to vocational education management in Thailand (the research about vocational school and establishment cooperation in DVT and the research about the forms of vocational school and establishment cooperation in Thai industrial technician production), not only it reflects the importance of policy clearness factors, political support, educational resource allocation, and agency coordination but it also shows the importance of public private cooperation in Thai vocational education management especially in training. The establishment is the learning source and the training place in the real working environment which will be beneficial in knowledge enhancement and student expertise before earning a living. Besides, the works about vocational school and establishment cooperation in the industrial technician production also make you see the forming of industrial technician production system in the world leading industrial democracy countries. Besides, it reflects the importance of intermediary association in operating, improving and changing the structure of skill production system in each country. Therefore, it will be beneficial to Thai industrial technician production problem solving next as in the works of Nipon Poapongsakorn et al. (2011).

3.2.2 Researches Outside Thailand

The researches related to the vocational education in foreign language composes of the researches about vocational education comparison, model of vocational education management and development, and educational policy implementation as the following:

Vocational education comparison researches such as Van Lieshout (2007) Duangnapa Mogkaranurak (2009) Soliman (2011) and Chen (2012) as the followings

Van Lieshout (2007, pp. 1, 352-353) aims to improve our understanding of how particular governance regimes influence the operation of vocational education and training (VET) markets. He conducted an international comparison of three different governance regimes of VET markets in Germany, the Netherlands and the American state of Wisconsin. The central question underlying the national analyses and comparisons is: How do markets for intermediate skills operate in Germany, the Netherlands, and the American state of Wisconsin? Governance regimes for VET consist of much more than states and their VET legislation and related policies. At the very least, an effective analysis of VET governance regimes considers at least four potentially equivalent coordinating mechanisms: market mechanisms, hierarchies, states, and associational governance. The research found that both Germany and the Netherlands have governance regimes where the four coordination mechanism all play an important role; the difference is in the particular mix of those governance regimes, and their interaction. With the U.S., one of the four governance mechanisms, associational governance, is less developed than in Germany or the Netherlands. Even adult and youth apprenticeship do not involve employer's associations and unions as prominently, with the notable exception of the construction sector. With the underdevelopment of VET in high schools, the American regime is firm-based as in Germany; the crucial difference is that of an unorganized and an organized labor market. Nonetheless, in effect, the key part of that difference is that German youth will enter into a multi-year contract with a single firm that is accompanied by a formal training plan. American youth that do not go to higher education will typically have had two or three subsequent semi-skilled jobs over a similar period, with some informal training, and possibly a course or two at a two-year college. Therefore, one can hardly label the American regime as 'hierarchical', since German firms typically

play a more substantial role for a longer period in training individual young persons. National states, then, do not have a serious other option then to go their own way in developing their market for intermediate skills. International comparisons can help to identify alternative ways on how such markets can work, and inspire ideas for reform at home. The idea to straightforwardly copy one or the other aspect of another countries' governance regime, however, will seldom lead to similar results6. Rather than straightforward copying of such institutional arrangements, international comparative work can result in new questions that can shed a new light on the strengths, weaknesses and peculiarities of one's own market for intermediate skills.

The research of Duangnapa Mogkaranurak (2009, as cited in Nipon Poapongsakorn et al., 2011, pp. 3-4) compares between vocational education system in Thailand and Germany. The important factors that make Germany successful in vocational education system are 1) Clear Government's Policy 2) Sufficient Budget Support and 3) Cooperation and Helping Each Other in Every Sector in the Society while Thailand is still having the problem of policy changing because of political fluctuation and government budget support in the establishment's training. Besides, Germany obviously cooperates with the establishments, the chamber of commerce and other business sectors and it is a national cooperation operated by the Ministry of Education of the country. On the other hand, Thailand has loose cooperation and it is only in the school level. One of the interesting differences is that Germany pays attention to dual system while Thailand pays attention to a formal vocational education program which may be compared to only a full time vocational school in Germany. However, Duangnapa Mogkaranurak concludes the important weaknesses of Thai vocational education system as follows: 1) Thailand lacks implementing the policy concretely and efficiently and 2) People in the society gives value to the university more than the vocational education.

Soliman (2011) extends analysis of the policy problem of Egyptian Vocational Education and Training (VET) beyond the current supply/demand mismatch perspective and into a broader institutional analytic framework. It critically deploys concepts from Whitley's institutional framework (1999) and Wood and Frynas' (2006) Segmented Business Systems (SBS) archetype to the problem, complementing them with historical and political dimensions. These illustrate the continuities and

discontinuities in key institutional features and relationships influencing VET since the military coup in the 1950s and through subsequent paradigm shifts. The institutional analysis illustrates that VET is embedded in a set of incoherent institutional arrangements that have constrained systemic development. Further, they have not supported development towards Western models suggested by international organisations. These have had limited effect. The findings have theoretical and practical implications. On a theoretical level, the proposition that Egypt largely corresponds to the SBS archetype is confirmed. Suggestions for modifying Whitley‘s institutional framework include 1) a better integration of historical and political dimensions; and 2) the inclusion of international organisations as a key institutional influence on state relations with social actors in developing countries. Practical conclusions confirm the ineffective levels of state-employer-union cooperation and contributions to VET. ILO attempts to develop these relationships through social dialogue were perceived to be largely ineffective by institutional actors. The ILO SDP has been constrained by institutional incoherencies which are difficult to change in the short- to medium term. Some positive experiences of effective state-employer-union cooperation and employer-employee interdependence were reported on regional and enterprise levels. These could possibly be expanded on by the ILO SDP as a bottom-up approach to enhancing social dialogue. Finally, the 2011 events could offer new institutional opportunities for enhanced representation of social actors in socio-economic matters which could possibly lead to their effective cooperation in VET and its development; an area which could be pursued in future research.

Chen (2012) is dedicated to analyze and compare the competitiveness of the VET system of China and Sweden qualitatively and quantitatively and then gives some suggestions on China’s VET development. He applies Porter’s Diamond Model as the methodological framework with necessary modifications for this paper’s purpose. The aim is to see why Sweden is the leading country in VET system construction and what can China learn from Sweden’s previous experience. The research found that government support is vital in all the factors that are involved. Sweden is the forerunner that China can follow in finding government’s role in VET regulation. China has to spend a higher proportion of its increasing GDP every year to education in which a higher proportion should go to VET to build up a more

competitive VET system just like Sweden. Furthermore, in addition to generous investment, Chinese longstanding discrimination which is not seen in Sweden on VET must be altered because it prevents high quality students from attending VET and also prevents VET students from finding a satisfied job. It is also expected that there can be a closer corporation between industry and VET in China and some of the measures carried out in Sweden can be borrowed, such as apprenticeship with equal qualification and staff training. Besides similarities, there are also differences between Sweden and China.

Next, model of vocational education management and development research is one belongs to Kakilleke (2010) investigate and determine the characteristics of a VET program model at the secondary school level which might address the current student transition problem in PNG. The following question was used to direct this research: How can a VET model address and minimise the current student transition problem at the secondary school level in Papua New Guinea? The results illustrated how VET in Papua New Guinea (PNG) was given little priority at the policy level. Most stakeholders thought that academic subjects would assure a better future than VET subjects. Although VET subjects and employability skills and attributes were considered to have some importance by most stakeholders, almost always they expressed some reservations. Most students and teachers thought that VET subjects were less valuable than academic subjects. Similarly, most business/industry personnel expressed that postgraduate students and other tertiary graduates possessed better skills for work than the secondary school graduates. This was because VET programs were restricted to post-secondary schools or TVET colleges. Most stakeholders failed to realise that the academic subjects could be studied only by a minority students. Teachers and school principals were trying their best to manage their schools within their means. Most did not have the required teaching and learning facilities to implement the new VET subjects at secondary level. These reforms were put in jeopardy because of the lack of resources, especially classroom space, training facilities and qualified VET teachers. Although the stakeholders were positive about the importance of VET, there was little evidence of actual participation in VET programs at the secondary school level. The results illustrated a need to embrace both VET and general academic subjects as an integral part of secondary school level in

PNG. Therefore, the study concluded that PNG needs to consider and implement an integrated academic/VET program model at the secondary school level. This integrated academic/VET model would enhance many students' pathways for further education and training, employment and improvement of life in PNG.

The cooperation between the colleges and firms in industrial technician production such as Unwin (1994); Almegren (1996); Mulraney, Turner, Wyatt, Harris, and Gibson (2002); McCoshan and Otero (2003); Callan and Ashworth (2004) as the following:

Unwin (1994) examines the role of employers in vocational education and training (VET) with particular reference to initiatives targetted at the 16-19 age group. Its premise is that the so-called 'employer-led' initiatives of the 1980s and 1990s have, in fact, been government-led and that employers have played a particularly passive role in their design and delivery. This research attempts to reveal the realities behind the employer-VET interface through two closely observed case studies of, firstly, a Training and Enterprise Council (TEC), and, secondly, a Training Credits pilot programme. The findings were that if policymakers do have a real understanding of the needs and attitudes of employers, the history of VET initiatives would suggest that they have allowed the knowledge that employers are renowned for their short-termism and inability to see training as a major company concern to determine a laissez-faire, voluntaristic approach to VET. It is time to construct a new paradigm within which we can explore and develop meaningful roles for the various stakeholders in VET, and in particular, for employers. Such a paradigm must recognise the diversity of employer experience and expertise and have the capacity to compensate for major inadequacies among some employers and in some occupational sectors in terms of the ability and desire to provide adequate and appropriate VET practice. A major step forward in constructing the paradigm would be to identify, in the clearest terms, the make-up of the stakeholders and ensure that each had an, adequate understanding of the others' characteristics. Through such clarity, a much more genuine picture of the VET landscape would emerge, providing a foundation on which to build policies which provide benefits to all stakeholders. This is not to advocate acquiescence to vested interests. It is to recognize that it is in the interests of stakeholders to adapt their position and demands in the light of their new awareness of each other's role and function.

Almegren (1996) studies the research about personnel and institutes' opinions in the school and establishment cooperation. He found that there is positive thinking to the cooperation though there is not much cooperation. However, there are a lot of negative thoughts to the characteristics of vocational students as follows: 1) less skill and knowledge 2) confidences and motivation lacking 3) establishment information lacking and 4) work and labor system and discipline lacking, He also found that the school curriculum does not respond to establishment demands.

Mulraney et al. (2002) investigate current practices in school–small enterprise links, to examine current literature in relation to structured workplace learning, to identify issues and common themes, to develop an integrated theoretical framework for structured workplace learning and to make suggestions regarding future directions. The key research findings were as follows: 1) there was little shared coherent understanding between schools and small business enterprises as to what constitutes 'structured workplace learning'. 2) small enterprises were not normally informed about the nature of structured workplace learning. 3) students did not generally understand the differences between 'structured workplace learning' and 'work experience'. 4) while employers generally displayed considerable altruism by taking on workplace learning students, they saw few benefits to the small enterprise other than 'feel good' considerations. 5) mechanisms had not been established that involved the small enterprise in the design of structured work placements, including the assessment of students. 6) Employers regarded 'attitude' as the most important attribute that they wished students to display when undergoing structured workplace learning. 7) the framework for structured workplace learning has been targeted at big business which often has a significant training component. However, the same situation does not apply to small enterprises. 8) Structured workplace learning has been constructed predominantly from the perspective of schools and does not adequately reflect models of partnerships.

McCoshan and Otero (2003) findings were that 1) the colleges work with employers to improve the employment prospects of their learners, to generate income and to contribute to the economic development of their local area. 2) Individual college departments and business units have the most important role in organising and shaping links with employers. 3) Two-thirds of colleges now have business units and

more are planning their introduction. However, the form and function of these units varies substantially, as does their degree of integration with their "host" colleges 4) The evidence for collaboration between departments is not strong and the lack of integrated approaches to employer contact means colleges risk not knowing who last contacted an employer, why and with what result. 5) Whilst almost all colleges offer a "common core" of flexible provision such as training outside office hours, less than 50% offer more complex provision such as business solutions, research and development and product design. Such provision requires greater commitment from colleges to be more proactive, to adopt a holistic approach to employer needs and to have higher skills levels amongst their staff 6) College principals have very positive views about the quality of their links and employers' satisfaction, but also believe that they need to become more responsive to employers, and to give greater priority to employer links over other college priorities 7) Funding arrangements and qualification systems are the main external barriers identified by colleges to achieving greater responsiveness. Internally, colleges need to overcome the inflexibility of timetables and the lack of requisite staff skills, particularly industry knowledge and selling skills. 8) In particular there is a lack of resources to fund the up-front investment required to build and maintain a base of employer business and the face-to-face contact this entails.

Callan and Ashworth (2004) investigated the nature of a number of the larger and more commercial vocational education and training (VET) industry–provider training partnerships operating in Australia. The findings were that 1) recognise the competitive realities businesses are facing as they try to build training and ongoing skills development into their organisations or industries. 2) build as much flexibility and customisation into the training as is feasible and manageable within the allocated budget. 3) given the time involved in establishing a larger training partnership, support the establishment of longer-term partnerships. 4) Accept that a 'break-even' outcome initially may be the best financial result that a training provider may achieve, particularly since some outcomes may not be realised in financial terms. 5) Find and then develop staff who have special responsibilities for initiating and managing the start-up stages of larger training partnerships. 6) Assemble a core of individuals who want to be responsible for the successful management of the partnership and the

achievement of its training objectives. Ensure that senior management becomes committed early to the partnership. This can be achieved by demonstrating evidence of the financial and non-financial returns to the training organisation and the industry partner through an investment in training. 7) build a learning environment within the partnership here individuals are encouraged to seek and provide regular feedback and review. 8) Build staff capability in the many skills which support partnering, particularly communication and entrepreneurial skills. 9) Assume that, over time, the quality of the relationship developed will prove to be a more important issue to the industry partner than the actual financial cost of the training to them.

The researches on policy implementation are such as Brown (1994); Hahn, Green, and Waterman (1997); Gornitzka, Kyvik, and Stensaker (2005)

Brown (1994) studies on "The role of policy implementation and its effect on policy outcomes." He mentioned that an integral understanding of the policy process is required. Dye (1987) suggests a 'process model' which identifies the various processes occurring within a government system or discipline. Dye's (1987) model includes the identification of policy problems through public demands for government action; the formulation of policy proposals by policy planning organisations, interest groups or government bureaucracies; the legitimation of policies through political actions; the implementation of policies through organised bureaucracies and the evaluation of policies by government agencies or outside agencies. The findings were that in order for educationalists to stimulate or modify policy in art education they must enter the policy arena equipped with knowledge and understandings of the policy process. By understanding of the process of implementation, through analysing the Education and the Arts policy, educators will become skillful and efficient in influencing the final outcomes. To influence outcomes, one must enter the policy arena equally with other influential groups such as government bureaucrats. It is envisaged that the results of studies such as this, concerned with econstructing the implementation process and analysing the policy outcomes, will empower educators to influence the policy development.

Hahn, Greene, and Waterman (1997) evaluate the results of implementing the public policy in education in 11 innovative projects. They found many interesting issues such as, firstly, there is possible in implementing public policy (plan/project) in

different areas (different problems) by designing different projects, secondly, what is missing from many projects is technocrat support which is the important factor that helps accomplish the objectives and lastly project success will happen when there is agency cooperation, organization cooperation and personnel cooperation both in planning and follow-up.

Gornitzka, Kyvik, and Stensaker (2005) is studying about "policy implementation analysis in university". It is the study of policy implementation that indicates the study of Gornitzka, Kyvik, and Stensaker (2005). They use the methods from the policy objective announcement to the policy implementation process. The results of this method are the factors that affect the policy implementation in university. The factors are as follows: 1) target clearness and accordance 2) theories that have enough reason to be the reform foundation 3) continuous carefulness to policy 4) enough financial resources 5) public policy administration capability and 6) the missions by the objectives of reform. This method is not only the top-down process but also the top-down implementation process. The results are the target success, the political interpret of policy, and the intentional and unintentional impacts in university system.

In conclusion, from the research studies that are related to vocational education administration in foreign countries above, there are 1) a comparable study of vocational education form 2) development study of vocational education form and 3) works related to education policy implementation. Aside from reflecting the importance of public private cooperation or an increasing of private sector roles in vocational education administration, the comparable study is beneficial in classifying the forms of each country administration as well as the good and bad points of each form and the way to adjust each context of the country. All of these reflect the importance of vocational education administration that has capacity development in competition of the country especially in the works of Van Lieshout (2007). It reflects the contextual factors and conditions related to all vocational education administration systems. It is the study to show connection between education and labor production and importantly it is the work that gives importance to authoritarian factor in commanding which is important in planning and controlling and pursuing the vocational education policy implementation results. However, the work that emphasizes on the policy implementation also indicates the important factors as

follows: 1) target clearness and accordance 2) the continuous carefulness to the policy 3) financial resource sufficiency 4) public policy administration capability and 5) the missions by the reform objectives as in the research of Gornitzka et al. (2005) etc. However, the research of Duangnapa Mogkaranurak which analyzes and compares the vocational education system between Thailand and Germany specifically found that the important factors that affect the success of German vocational education system are 1) Clear Public Policy 2) Sufficient Budget Support and 3) Cooperation and Helping Each Other in All Sectors of the Society. Besides, in Germany there is clear cooperation with the establishment, the chamber of commerce and other business sectors. Besides, it is a national cooperation operated by Minister of Education of the country which is different from Thailand. Thailand has loose cooperation and the cooperation is only in school level. However, one of the interesting differences is that Germany pays attention to the dual system which is an education system under a close cooperation between public and private sector. However, Duangnapa Mogkaranurak (2011) gives his opinions that the important weaknesses of Thai vocational education system are 1) Concrete and efficient policy implementation lacking 2) People in the society give value to university more than vocational education.

Meanwhile, from the research result about vocational education management in Thailand, it reflects the importance of an increasing role of private sector in vocational education management both in curriculum and training because the establishment is the learning source and a training place in the real working environment. Moreover, it is also the primary source for determining the way to produce and develop workforce aside from the education resource allocation and the serious agency coordination. In the time that Thailand is entering ASEAN Community in 2015, there will be free flow of labor in the member countries. Therefore, Thailand has to prepare workforce for that change. Duangnapa Mogkaranurak (2011) used to suggest the government to seriously pay attention to vocational education. The objective is to be the national policy. The government should determine the roles of every agency to cooperate continuously and seriously. The study should emphasize on the practice and the cooperation with the establishment in DVT. Besides, it should develop teacher’s skill in accordance with

the change of technology and allocate compensation in accordance with the capacity etc. However, the researcher will bring the research results to analyze and synthesize and conclude the main points to determine Research Frame next.

3.3 Conceptual Framework

From the study of concepts and theories such as policy implementation concept, public private cooperation concept and Skill Formation, there are overlapping and accordance especially in the dimension of public private cooperation in industrial technician production importance. The policy implementation reflects the political factor which is essential to the continuation and integration between agencies. The political factor also affects the policy success. However, public private cooperation in vocational education management is very important as seen in the Model country of DVT such as Germany.

Therefore, the researcher has hypothesis from this research that the political factors (Minister of Education change and administrative unity lacking) affect work-integrated factor and operation of government agencies (the Ministry of Education and the Ministry of Labor and Social Welfare and the Ministry of Science and Technology). It also affects private sector support in industrial technician production of the country including the public private work integration. The hypothesizes are as follow;

The political factors directly affect public agencies' performance in the industrial technician production.

The political factors directly affect private sector support in industrial technician production.

The political factors directly affect work-integrated factor and public agencies' performance in the industrial technician production.

The political factors directly affect work-integrated factor and private sector's performance in the industrial technician production.

The work-integrated factor directly affect public agencies' performance in the industrial technician production.

The work-integrated factor directly affect private sector support in industrial technician production.

The political factors directly affect work-integrated factor and cooperation between public and private sector in industrial technician production.

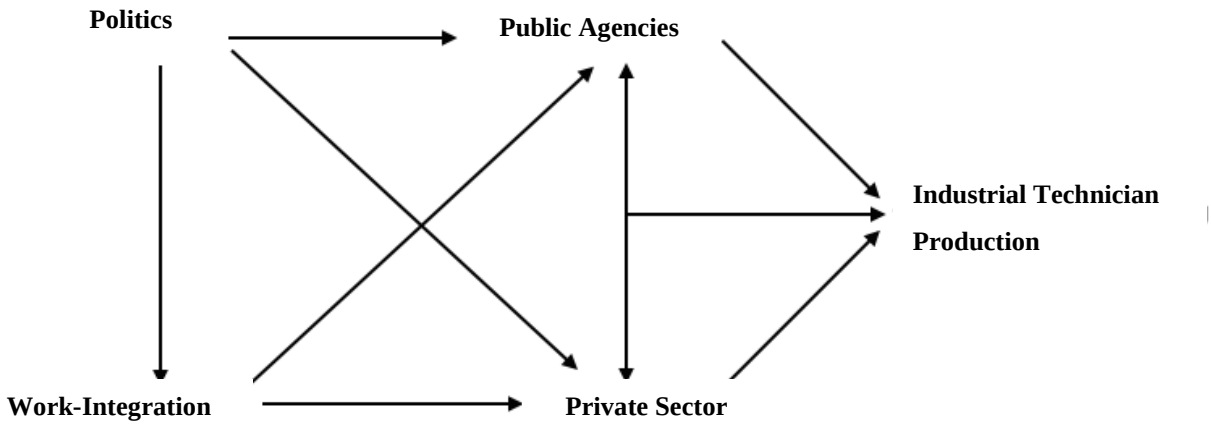

Figure 3.7 Conceptual Framework

CHAPTER 4

RESEARCH METHODOLOGY

The purpose of this dissertation, Production of Industrial Technician Manpower in Thailand: Problems and Solutions" , is to answer what the current problems of Vocational Education Management in Thailand are, why it could not produce qualified students for the labor market, and how the problems regarding the production of industrial technicians can be solved and improved. This study mainly employs the qualitative research method.

4.1 Research Design

In this study, the researcher studies and analyzes the qualitative information using the process tracing technique. The process tracing technique involves information retrieving and empirically surveying to find possible reasons and consequences of a social phenomenon which defines the structural relations between institutes to make a decision to achieve their goals both at the macro and micro levels (Little, 1998, p. 211) or at the policy and practice levels. Therefore, to apply the method, the researcher has to use the information from both the primary and secondary documents such as documents and government publishes; government announcements, agencies' policies, law, act, related ministerial regulations, the National Economic and Social Development Plan, texts, articles, related research both in the country and abroad including the interviews of officials in any occasions, executives in the government involving in the policy process, as well as "the players" in important agencies, i.e., Secretary-General of the OBEC, Secretary_General of the VEC., the Ministry of Education, the Ministry of Labor, the Ministry of Industry, entrepreneurs and academics.

Besides, the interviews from both formal and informal key informants such as government, private sectors and schools are very necessary. To collect this part of

information, the researcher divided key informants into three groups. The first two groups will provide deep information from different dimensions of inner perspectives.

The three groups of key informants are as follows:

Group 1: Agencies involved in the production and workforce development of the country both at the policy and practice levels. “The players” at the policy level consist of the VEC., the Division of Labor Development Research, the Human Resources Research and Social Development Sector, the TDRI and the Institutions of Reinforce Human Competency, the Federal of Thai Industries etc. The representatives are executives from schools that cooperate with the private sector in managing vocational education such as Maptaphut Technical College BanKhai Technical College Rayong Technical College Technical College Sattahip IRPCT Rayong E-SARN Technological College Metro Technology School etc.

Group 2: Agencies involved in workforce demand. These agencies include Department of Skill Development, Ministry of Labor, Department of Employment, Ministry of Labor, Office of Industrial Economics (OIE), Ministry of Industry, The Independent Institutes, Ministry of Industry, Toyota Motor Thailand Co., Ltd., Honda Automobile Thailand Co.,Ltd., SCG Cement-Building Co., Ltd., Suksapattana Foundation etc.

Group 3: Experts and Academics in Economy, Industry, and Education who follow and notice the development and the changing movement of the production policies and workforce including workforce demand situation and labor market demand. Experts and Academics in this group are former high commissioners, researchers or lecturers. The researcher interviews these experts and academics for different perspectives which may provide a clearer picture of the situation. Furthermore, the researcher will have an informal interview with other key informants such as representatives of professional associations and industrial associations. To interview key informants, the researcher will prepare specific questions or issues. The interview takes 45 minutes to one hour and a half (see Appendices for more detail).

4.2 Data Collection

The researcher collected the information from key informants (institutions of education) and directors of vocational education colleges before analyzing the problems and ways to produce industrial workers today from the perspectives of the experts in workforce production and policy implementation. Then, the researcher collected the information from the key informants in both public and private sectors. Following are the details of how the researcher collected the information for this dissertation.

The researcher contacted key informants and informed them about the objectives of the study. Then, the time and place of appointment were arranged. The informants were provided with the problem issues so that they had some time to prepare themselves in advance. The researcher prepared the equipment for recording the interview and studied additional details of each agency, such as policies and ways of managing labor shortage and the progress of the related policies, etc. before an appointment. At the appointment, the researcher introduced himself, mentioned the objectives of the interview, and asked for permission to record the conversation. The researcher started the interview by asking semi-leading questions about the policies of the agency and the solutions to the labor shortage problem nowadays to familiarize himself with the key informants and let them know that we studied the basic information. Then, the researcher asked questions developed based on the framework and related research studies and examined the information by repeating the questions during the interview. The researcher ended the interview with open-ended questions, so that the key informants could give their opinions freely regarding the issues to confirm their thinking framework, such as the roles of the government to solve labor shortage problem, the important factors to solve it, and their suggestions.

4.3 Data Analysis

The researcher used the qualitative research method in this study to analyze and interpret the information all the time. The researcher applied the concept and theory to build the system to study this phenomenon and to make it convenient to analyze the information by inductive and content analysis.

4.4 Measure of Reliability and Validity

The researcher focused on the accuracy and the correctness of the qualitative study by using theoretical framework, study the related researches, and advice from experts including Denzin's (1978) triangulation method which consists of data triangulation and methodological triangulation and examine the result for correcting the study before drawing the conclusion.

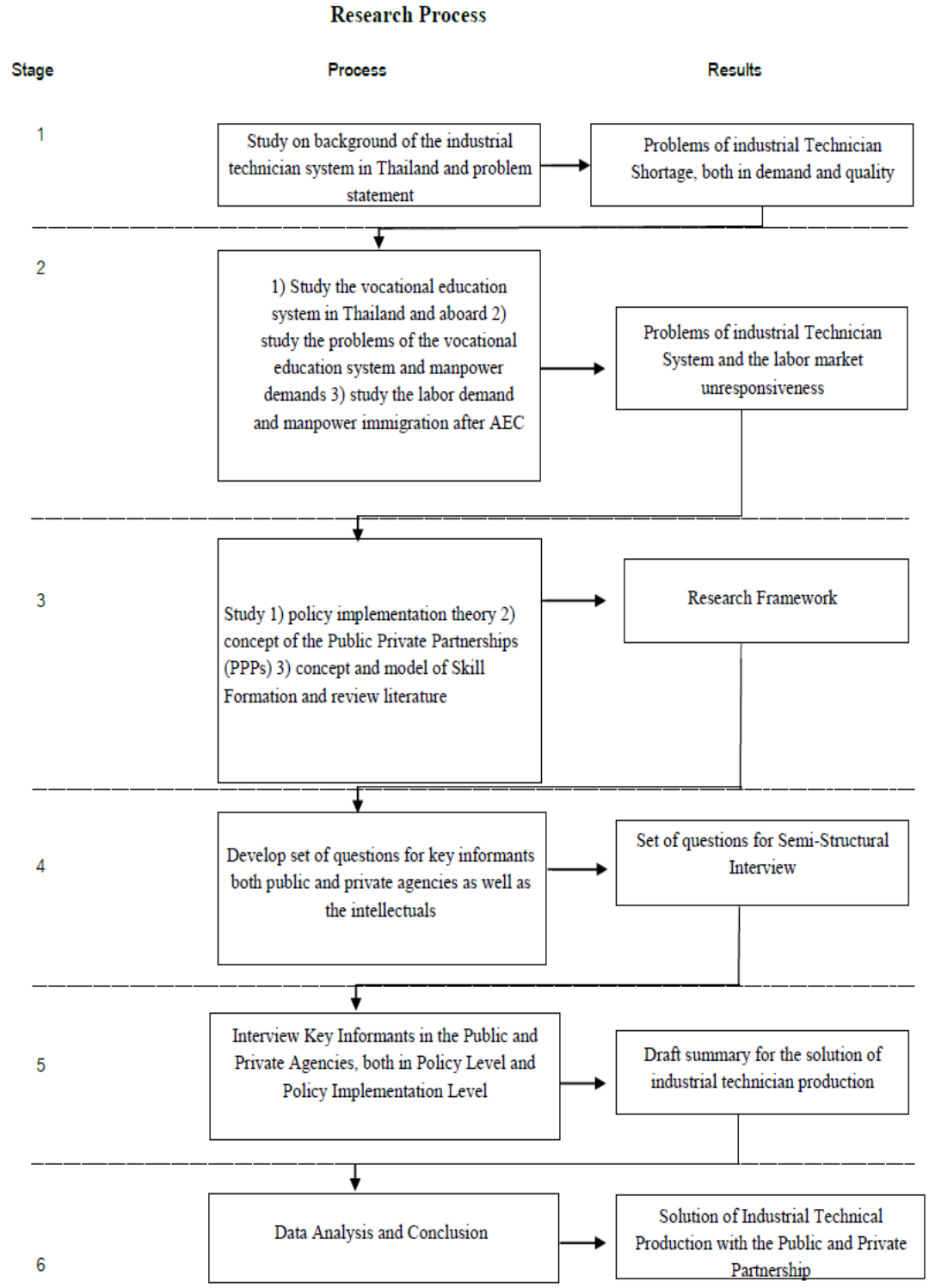

Figure 4.1 Research Process

CHAPTER 5

INDUSTRIAL TECHNICIAN PRODUCTION IN THAILAND: PROBLEMS AND SUCCESS CASES

For cooperation between the public and private sectors to manage enrollments, it appears to be the provisions of the two laws which is National Education Act B.E. 2542 (1999) and Vocational Education Act B.E. 2551 (2008). The details are as follows:

1) National Education Act B.E. 2542 (1999)

Section 20 Vocational Education Management and Vocational Training are provided in public schools, private schools, establishments or cooperation between establishments and schools according to the Law on Vocational Education and other laws.

2) Vocational Education Act B.E. 2551 (2008)

Section 6 Vocational education management and vocational training must be an educational management in vocation corresponding with the national economic and social development plan and national education plan to produce and develop workforce in vocation at craftsmanship level, technique level and technology level, and an improvement in vocational education to meet labor market demands by using the knowledge of theory (universal and Thai intellect) to develop capability in practice and capacity until an educated person can earn a living as a practitioner or the self-employed.

Section 8 Vocational Education Management and Vocational Training are organized in these forms as follows:

(1) Formal education is focused on professional education in vocational schools or major institutions. There are certain objectives, study method, curriculum, and definite measurement and evaluation time.

(2) Non-formal education is a flexible vocational education in determining goals, forms, studying methods, time, measurement and evaluation as a

condition of graduation. The course content must be appropriate and in line with the problems and needs of each individual group.

(3) Duals System is a study based on an agreement between vocational schools or institutions and establishments, state enterprises or government agencies in the studying course and measurement and evaluation. The students spend time studying in vocational schools or vocational institutions, and spend time for practical learning in the establishments, state enterprises or government agencies.

To benefit in the production and development of workforce, vocational education schools or vocational education institutions can arrange by article 1 in many forms combined. However vocational education schools or institutions must mainly focus on the duals system.

From the main provisions of the law, both of the above, vocational schools must give priority to cooperation with the establishment, especially the establishment, it has to be a training place for experience by providing students the opportunity to start training under real working environment. Therefore, vocational education schools need to develop the teaching profession or style of teaching profession in the regular education system of the Office of Vocational Education Council. At first, the students only had the opportunity to practice real apprenticeship in just one semester, or about four months. While the style of duals system tries to bring establishments to take part in the management to develop solutions to solve students' problems for preparing students to have capacity to meet the establishment demands and be ready for occupation. Imminently, this approach also improves vocational education to meet the real labor market demand.

However, in practice it is found that there are also other forms of participation of the private sector in the management of vocational education. In this chapter, we will discuss about the importance of duals system in Thailand which consists of background, formality, process, management approach of duals system with the solution to solve labor quality before summarizing and analyzing the production of industrial technicians under cooperation between the public and private sectors in the overall practice.

5.1 Dual Vocational Education

The government has announced a strategic reform and vocational training in Thailand. The main three strategies include nine measures. Strategy 1 Measure 1.3 accelerates learning reform in accordance with labor market demand including small and medium-sized industries. Strategy 2 Measure 2.2 develops cooperation. The main principle is providing students with both theoretical knowledge and practical expertise. The vocational training and therefore play an important role in the development of quality workforce to meet the specific needs of the labor market which is changing in technology rapidly over time. So, management of vocational education and technological development must provide students with both theoretical knowledge and practical expertise by making an agreement with the establishments which will be the key mechanism that makes vocational education achieve its purposes and comply with the requirements of the labor market.

Therefore, the VEC has an obligation to manage vocational training to have quality standards and comply with the requirements of the local labor market. To achieve this mission, the VEC has a strategy to create a strong network and promote participation in vocational training. However, to create the vocational education network, duals system is the heart of it. Department of Vocational Education (previously) has managed Dual Vocational Training since 1984 by setting dual system at Taluang Technical College Saraburi and started to have more success. Then, the name of school-factory system had changed to Dual Vocational Training: DVT before dull in 1997 partly because the department did not' get the support after it had changed from Department of Vocational Education to the Office of the Vocational Education Council in 2003. After an announcement of Vocational Education Act in 2008, and the determination of General Prayuth Chanocha, Commander of the Royal Thai Army, the vocational education has gained more popularity again.

5.1.1 Background

The Dual Vocational Training in the cooperation between schools and establishments has started from 1984 until now The development and changes are in the context in the four periods of time as follows:

1) Phase 1 Dual System 1984-1994

Objectives to train industrial technicians to have quality to meet the establish demands and save the government's budget

In 1984, Department of Vocational Education got a help from Federal Republic of Germany. Siam Cement Group delivered Cementhai Upathum Schools to Department of Vocational Education to set Thaluang Cementhaianusorn Technical College as a Technical College Model to try Dual System. The government received an approval and academic help from Federal Republic of Germany in October 1986 for three million Deutschmark in financial amount. The Federal of Thai Industries supported establishments under The Federal of Thai Industries to participate in the project. The Federal of Thai Industries prepared individuals, developed and trained teachers of the establishment. In addition, it studied the establishment demands and discussed with the establishment under the project. The Federal of Thai Industries and the establishment participated in managing the curriculum together by setting industrial subject as a model subject. They set rules and regulations, measurement and valuation and public relations to the parents and students who want to be a trainee in the project. Finally, they approved a certificate of technical expertise for trainee in the field of industrial maintenance at Tha Luang Technical College. A student as a Trainee was accepted in 1989 for the first year and there are a total of 30 people. In this trial, German government assisted in the development of course and instruction, develop of teachers and equipment. For the establishment of the ATC (Apprenticeship Training Centre) at Tha Luang Technical College and the project experts, most of the establishments that trained a trainee have a satisfaction with the work of the trainees for the curriculum of three years. Certified technicians are qualified to work with any establishments.. Mechanic trainee salaries are more than vocational graduates. (Boonyasak Jaijongkit, 1998, pp. 9-10).

In the first phase of the project, there was a problem of making persons at all levels to understand especially in the public sector. Parents were the second problem because they had the value of the diploma and their children had to work as Trainee in the establishment while studying in schools. When Trainees finished a course, they would get a vocational certificate for continuing their study in a vocational diploma. However, they could not do this because they graduated in the

curriculum that was different from other general vocational curriculums and had more practice. Moreover, there was also a problem of finding the right establishments in the area to participate in the project. Some establishments in the projects could not train their Trainees to meet the teaching standards and criteria, so it caused a problem for the training teachers. Most importantly the project managers were changed all the time, so it made the project discontinuous and it made the trainees lose their hearts including some of the chosen project experts did not work well with the project (Boonyasak Jaijongkit, 1998, p. 10).

In 1991, there were more vocational education schools in Dual System. The three Colleges were Min Buri Technical College, Samut Songkhram Technical College and Rayong Technical College.

In 1992, rename Dual System to Dual Vocational Training: DVT

Because of the expansion of the curriculum from the industrial technicians to other fields such as Home Economics and Business Administration (Business Hotel), arts and crafts (Rattan) and agriculture (dairy cow). Therefore, German government assisted in the Phase 2. (1995-1999) and Department of Vocational Education thought that it should rename the system from Dual system to Dual Vocational Training. In Phase 2 the German government assisted in many fields except durable articles, but would focus on public relations to create understanding. The German government also developed teachers, training teachers and the experts. The assistance in Phase 2 was around 5.5 Deutschmarks (Boonyasak Jaijongkit, 1998, p. 10).

The turning point of the development and the expansion of Dual Vocational Training (DVT) happened when the entrepreneurs of the gem industrial export lack quality workforce at all levels. Therefore, it made the goal of the export that Thai Gem and Jewelry Traders Association had set to 100,000 million Baht and the goal to develop Thailand to be the center of Gem and Jewelry getting far away. In 1993 the cabinet reached the conclusion and the Ministry of Education had to cooperate to solve the problem. The Ministry of Education assigned Department of Vocational Education to solve the problem. Department of Vocational Education coordinated and discussed with Thai Gem and Jewelry Traders Association and the Ministry of Industry until reaching the conclusion and ways to solve the problem with

managing Dual Vocational Training in vocational certificate in jewelry field to improve the knowledge of workers and experts in the establishment. Meanwhile, they also cooperated to establish the curriculum of vocational certificate in DVT to meet the establishment association demands. Finally, the Ministry of Education agreed and approved the curriculum for Department of Vocational Education and other agencies that interested in the curriculum to use widely in 1994 which was another development to announce the policy of using DVT in all vocational schools all over the country. In 1995 Department of Vocational Education set the regulations and measurement and evaluation clearly. The assistant assessment from the private sector participated to be the committee and cooperated to determine the curriculum, to test and to evaluate systemically for the first time (Boonyasak Jaijongkit, 1998, pp. 12-13).

2) Phase 2 Dual Vocational System 1995-1998

Federal Republic of Germany assisted and focused on public relations to create understanding. The German government also developed teachers, training teachers and the experts.

1995 Department of Vocational Education set the curriculum of vocational certificate (1995) and got an approval from Ministerial Decree of the Ministry of Education to use it since 1995. The curriculum had various systems such as regular system, DVT system, units accumulated/ transfer and tele-education.

Due to the National Education Act B.E. 2542 (1999) section 20: Vocational Education Management and Vocational Training are provided in public schools, private schools, establishments or cooperation between establishments and schools according to the Law on Vocational Education and other laws, the VEC managed and developed the curriculum had taken to develop vocational diploma curriculum in 2001 (Update 2003) and National Education Certificate in 2013.

The management of Vocational Certificate in 2002 (Updated 2003) and Vocational Diploma (2003) was the education management by partnering with the establishment for teaching and studying. The management emphasized on the real practice and could be brought in the establishment at least one term on the job training. The school planned the training by integrating the vocational subjects with the establishment. (Office of the Vocational Education Commission, 2015, p. 6).

3) Phase 3 The half apprenticeship programs 1999-2007 (the course does not use the dual system but called the half apprenticeship programs). Educational institutions took curriculums in vocational training in the workplace continuously. Training lasted at least half of the duration of the program. (Office of the Vocational Education Commission, 2015, pp. 7-8).

4) Phase 4 Dual Vocational Training 2008-present

Due to the Vocational Education Act 2008 section 8, there are three forms of vocational management and vocational training; Formal education Non-formal education and Dual Vocational Training. This study was based on an agreement between educational institutions/schools and establishments (state enterprises. or government agencies in the curriculum of instruction measurement and valuation).The students spend time in studying in vocational schools or vocational institutes while spend another time to practice in the workplace (state enterprises or government agencies) for the benefits of the production and development of the workforce. However, education system must chiefly focus on Dual Vocational Training. (Office of the Vocational Education Commission, 2015, p. 8)

However, the Office of the Vocational Education Commission established Dual Vocational Education Center. There are seven people within the center. This center is managed to promote and support Dual Vocational Training specifically. the Office of the Vocational Education Commission manages the guidelines and regulations of Dual Vocational Training and gives them to every school under the VEC. The schools can manage Dual Vocational Training at least one major from 2013 until now. Besides, the VEC will promote and encourage vocational colleges under the VEC to use full curriculum of Dual Vocational Training. Now five patterns of Dual Vocational Training have been approved by the VEC (The Senate Committee on Education, 2009, p. 11) as follows:

Model A: Dual Vocational Training (100%) in the area

There are establishments in the same area as vocational schools, so students of all fields can be trained in the establishments.

Model B: Dual Vocational Training (100%) outside the area

There are not establishments in the same area as vocational schools, so students of all fields can be trained in the establishments. The establishments have to provide the place for the students to stay and teachers to take care of.

Model C: Dual Vocational Training in some fields.

Model D: Dual Vocational Training to officers in the establishment.

Model E: Dual Vocational Training with the establishments in foreign countries.

However, it depends on the readiness of the schools to manage the curriculum with the establishments.

5.1.2 Dual Vocational Training Management

From Vocational Education Act B.E. 2551 (2008), Dual Vocational Training is a vocational education management derived from an agreement between schools and establishments in these topics as follows:

1) Curriculum Management
2) Studying and Teaching
3) Measurement and valuation
4) Studying one part in a school and another practical part in an establishment

Therefore, the schools wanting to manage Dual Vocational Training have to follow these principles as follows:

1) Have contract of cooperation in Dual Vocational Training signed between the establishment and the school
2) Have training contract between the student and the establishment
3) Have training plan in all period of training in the establishment
4) Have valuation of skill standard which is valuating in the first half of the curriculum and the end of the curriculum
5) Have employment certificate from the establishment signed by the establishment
6) Have Dual Vocational Training Certificate signed by the establishment and the school

The establishments wanting to manage its own Dual Vocational Training, they have to realize that they will be the second home for the students, and they have to be ready in these subjects as follows:

1) The establishment has the characteristics of the work correspond to Dual Vocational Training standards and correspond to standards of each vocational subject. The establishment can provide the standard training to the students.

2) The establishment is ready to train in the vocational fields.

3) The establishment can provide the trainers and the controllers to coordinate the training and teach vocational subjects.

4) The establishment can provide an appropriate environment for the training.

5) The establishment can provide three years of training or until the end of vocational certificate.

6) The establishment can supply its personnel to attend the seminar with the schools.

7) The establishment can provide welfare and safety measure to the students during the training.

8) The establishment is in the convenient area.

From the above, we found that Dual Vocational Training is a vocational training, not job training. Dual Vocational Training has the integration of many subjects, not just train in some subjects. The students study and practice in vocational fields in the establishments by having the trainers to teach. They do not study general subjects in the establishments and also they have welfare provided while training.

However, there are two ways of coordination between the establishment and the school as follows: 1) the school finds its own training establishment 2) the VEC provides to the school from the establishments in cooperation such as The Federal of Thai Industries, Hotel Association, S&P Co.,Ltd., CP ALL, and Fueng Pattana Foundation.

Table 5.1 Differences between Job Training and Vocational Training

Issues	Job Training	Vocational Training
1) Preparation	The school and the establishment seek for an agreement in developing the student to meet the establishment demands.	The school requests for courtesy of the establishment to be trained.
2) Regulations or Agreement	Managing studying to meet MOU demands. Contract of skill training meets with the field of the study	
3) Studying Program	Cooperate to manage studying program to meet the demands of the establishment in Theory for 50% and in Practice for 50%	The school manages studying program in Theory for 70% and in Practice for 30%
4) Curriculum Development	The school cooperates with the establishment to develop the curriculum	The explanation in each subject, Thailand Industrial Standards Institute
5) Student Selection	Mutual selection by interviewing and testing with tests etc.	The school/ the student finds the establishment .itself.
6) Education Management	The period of time in vocational training and working training in the establishment is not less than half of the education	1 semester (vocational certificate and vocational diploma)
7) Trainers	Pass the training to have the qualifications by Vocational Education Act B.E. 2551 (2008)	Depending on the establishment
8) Supervision teacher	Supervision teacher get developed to have skill and knowledge from the establishment to become vocational teacher	Teachers in every department
9) Trainers	Valuate every subject by the establishment and the school 70:30 or by an agreement	Cooperate to valuate every subject

Source: Office of the Vocational Education Commission, 2016.

Table 5.2 Comparing the Differences between the Cooperation of the Private Sectors in the Training

Regular System	Dual Vocational Training
Teaching Methods	**Teaching Methods**
1) Studying theoretical subjects and practical subjects in the schools or in the establishments 2) Providing Training in the establishment or making vocational project 3) Setting the studying schedule per week depending on the schools	1) Studying the basic subjects in the schools 2) Studying vocational subjects depending on an agreement between the school and the establishment 3) Setting the studying schedule per week; Studying in the school for 1-2 days and training in the establishment for 3-4 days
How to Study	**How to Study**
1) A class study in office hours or out of office hours 2) Tele-education 3) Self study 4) Mix study 5) Unit accumulation study	1) A class study in the school 2) Training Subjects: the establishment will assign the trainers to take control of the teaching and the training.
Valuation of the Study	**Valuation of the Study**
1) Subjects/ Project:: the teachers are the valuators 2) Training: the school and the establishment cooperate to valuate. 3) Director of the school gives an approval of the study grade. 4) Valuate the study grade in each subject 5) Studying level will be valuated to Grade	1) Teachers in the school valuate subjects taught in the school and Director of the school gives an approval of the study grade. 2) Trainers in the establishment valuate subjects taught in the establishment and the controllers give an approval of the study grade. 3) Training: the school and the establishment cooperate to valuate 4) Valuate the study grade in each theoretical subject 5) Valuate practical result by testing to meet the standard of the skilled worker 6) Studying level will be valuated to Pass or Fail

Source: Office of the Vocational Education Commission, 2016.

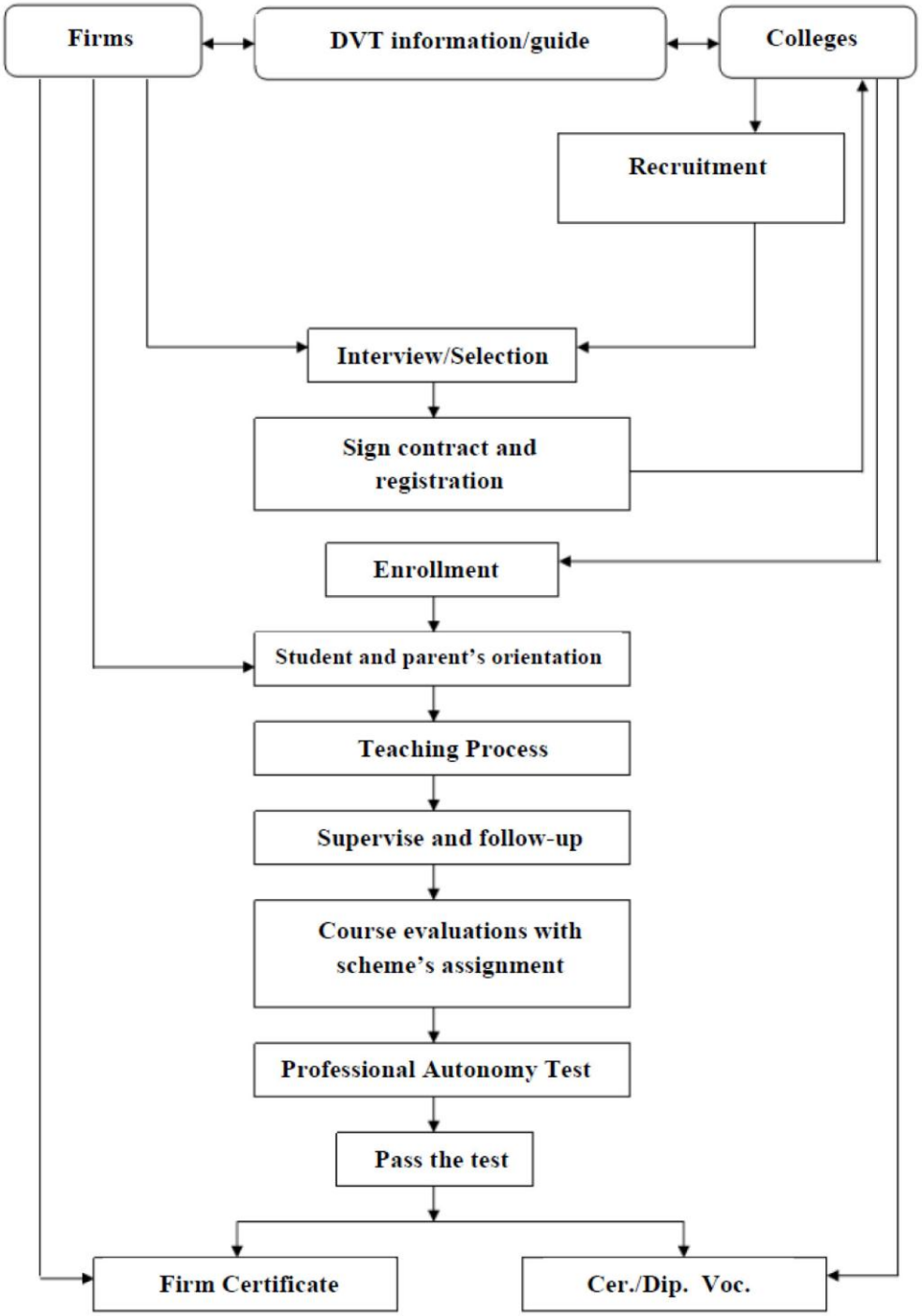

Figure 5.1 Dual Vocational Training (DVT) Process

Source: Office of the Vocational Education Commission, 2017.

5.1.3 Dual Vocational System Management and Labor Quality Solution

After the announcement of Vocational Education Act B.E. 2551 (2008) which is determined to formally organize Dual Vocational Training in the vocational schools for the first time, the vocational schools have organized this curriculum more. In 2010 there were 341 vocational schools using Dual Vocational Training which was more than half of all the vocational schools under the VEC. In 2015 from a total of 427 vocational schools, there were 363 vocational schools arranging Dual Vocational Training. There were only 269 places in 2012 which was a big leap (Information Technology and Vocational Manpower Center, Online October 18, 2016). However, an increasing number of the vocational schools obviously reflected the government's policy in 2014.

Table 5.3 The Number of Colleges with Dual Vocational System between 2008 – 2016

Academic Year	Colleges with Dual Vocational System
2008	244
2009	232
2010	341
2011	268
2012	269
2013	N/A
2014	382
2015	404
2016	410

Source: Office of the Vocational Education Commission, 2017.

Due to the increasing number of students when compared to students in the overall system, it is rather low. After 2010, however, the number of students is increasing obviously and mostly in vocational certificate. However, in the previous year the number of students in vocational diploma doubled the number of students in

vocational certificate. In 2014 there were 32,149 students in vocational certificate in Dual Vocational Training and 29,115 students in vocational diploma in Dual Vocational Training. Nevertheless, in 2015 there were only 5,863 students in vocational certificate in Dual Vocational Training which was decreasing a lot and 15,462 students in vocational diploma in Dual Vocational Training which was decreasing from last year but it was still a lot more than vocational certificate students. This point obviously reflects labor market demands in vocational diploma because Dual Vocational Training needs a close cooperation from the establishment. The school and the establishment have to make a contract and curriculum together. Trainers are provided in the establishment and the expenses for the students while training in the establishment.

Table 5.4 The Statistics of Students in Dual Vocational System between 2008–2014

Academic Year	Cer. Voc.1	Cer. Voc.2	Cer. Voc.3	**Total Cer.Vec.**	Dip. Voc.1	Dip. Voc.2	Dip. Voc.3	**Total Dip.Vec**	**Total**
2008	18,342	15,501	8,487	**42,330**	-	-	-	**-**	**42,330**
2009	7,566	5,092	5,219	**17,877**	4,585	4,307	8	**8,900**	**26,777**
2010	9,205	5,364	6,650	**21,219**	5,748	4,656	-	**10,404**	**31,623**
2011	8,977	6,220	6,644	**21,841**	6,657	6,683	-	**13,340**	**35,181**
2012	8,948	6,379	6,930	**22,257**	7,734	7,703	-	**15,437**	**37,694**
2013	10,003	6,973	7,318	**24,294**	9,035	10,041	-	**19,076**	**43,370**
2014	5,052	8,865	8,232	**32,149**	18,504	10,611	-	**29,115**	**61,264**

Source: Office of the Vocational Education Commission, 2017.

Therefore, the decreasing number of students in the two systems may be the reflection of the limit managing Dual Vocational Training. From the study of Thanin Srichompoo and Colleagues in the research and the concept of academics, Dual Vocational Training in the school has many problems in the organization level as follows: 1) Don’t understand Dual Vocational Training 2) Teachers lack experience in passing on knowledge to the students 3) Lack coordination between college and establishment 4) Teachers do not understand measurement and valuation 5) Trainers

in the establishment do not understand the purposes of supervision 6) Dual Vocational Training management is in the middle level 7) Equipments and tools in the school are not enough and modern for the vocational students in Dual Vocational Training (Thanin Srichompoo et al., 2014, p. 123)

Another factor for the decreasing number of students in vocational certificate may be the problems of maturity and limit of the law. The study of Subcommittee of Vocational Education, Education Commissioner and Senate (2013, p. 15) mentions that some schools and establishments do not accept vocational certificate students to study in Dual Vocational Training because the students are young and have a little maturity. Students cannot be responsible for important issues. They tend to quit studying in the middle of the study. They lack discipline and control of themselves. They cannot adjust themselves to the society. Moreover, they do not have enough knowledge for training in the establishment and they aren't bearable hard work from the training in the establishment. Some projects accept students in vocational certificate continuing with vocational diploma two years. Some establishments are afraid of breaking labor legislation because vocational students are under 18 years old. The management manager who takes care of the Dual Vocational Training project in Honda Automobile Thailand Co., Ltd. said,

> Right now we train only vocational diploma because of labor legislation. Vocational certificate students are not 18 yet and cautiously we have to be aware to use labor more than training because we may get sued after. This is the issues that Honda cannot accept and it will ruin our image. (Pairat Puendoung, personal communication, August 27, 2014).

However, the information from the IT and Vocational Workforce Center of the VEC does not specifically mention about which one of the five models the vocational schools take to manage Dual Vocational Training.

Model A: Dual Vocational Training (100%) in the area.

There are establishments in the same area as vocational schools, so students of all fields can be trained in the establishments.

Model B: Dual Vocational Training (100%) outside the area.

There are not establishments in the same area as vocational schools, so students of all fields can be trained in the establishments. The establishments have to provide the place for the students to stay and teachers to take care of.

One of the important factors that reflects the success of the vocational education management to produce vocational skills to directly meet labor market demands is the location in the industrial area and the success of Dual Vocational Training. From the review of the literature, the study result of Surasak Thanuthong (1996) mentions that one of the six conditions to be successful in Dual Vocational Training is Economy Condition. Economy Conditions consist of the location near Bangkok, Sufficiency of Industrial Factories and Convenience of Transportation and GPP.

For Model A, we found that the process is in the central region and eastern region such as Bangkok, Pathumthani, Nonthaburi, Ayuttaya, Chacheungsao, Prachinburi, Rayong, Chonburi and Samutprakarn. It is the main industrial estate of the country. There are two levels of the cooperation project in Dual Vocational Training; Industrial Level and Establishment Level

However, Model B is Dual Vocational Training outside the area. Students in the schools outside the area are sent to train in the establishments in industrial estate or in province having large establishments. The procedures are complicated and depend on the readiness of the school and the establishment. The establishment has a lot of expenses to spend both in administration and scholarship (study expenses, training expenses and daily expenses). However, the establishment has to coordinate these expenses with the school.

5.1.3.1 Dual Vocational Training in School and Industry

For the cooperation project to manage Dual Vocational Training in the schools in the area of industrial estate at Industrial Level, Vocational Chemical Engineering Practice College: V-ChEPC is initiated by Suksaphat Foundation, Petrochemical Industry Group, The federation of Thai Industries which consist of PTT Global Chemical Co., Ltd., SCG Chemical Co., Ltd., Ube Chemical (Asia) Co., Ltd., Dao Chemical Thailand Co., Ltd., Strapetroleum Refining Co., Ltd and the Office of the National Economics and Social Development Board. The purpose is to

produce workforce at technical level or vocational diploma to supply petrochemical industry which is the basic industry of the country. Petrochemical industry has expanded production capacity continuously and needed a lot of high-skilled technicians. Maptaput Technical College is pilot trials in 2008. The funding program started at 10 million Baht and until now (2013 explained by the researcher) it is around 59.8 million Baht for expenses in the project such as material supply, durable articles, scholarship, teacher development etc. For the third project (2014-2016), all of the six companies sponsored the project for eight million Baht

At the project process, the establishment and the college will cooperate to manage the curriculum by adjusting the curriculum of the VEC to comply with the purposes of the establishment. At the study management, the college has brought Constructionism to use in this project which is an activity to teach thinking skill, analysis, problem solution, searching for knowledge, building new knowledge, exchanging knowledge, and pay attention to teachers and trainers in the establishment. At trainers and teachers, there has to be a preparation. In this project, teachers in the school have to pass the training and have knowledge to become facilitator because they also have to go with the students to study at the establishment. While trainers in the establishment will be selected from public mind and have to be specifically trained for take care of Trainees. One trainee takes five trainers and every trainee will be trained Constructionism at AIT which KMUTNB has designed for (Vocational Education, Education Commissioner and Senate, 2013, p. 31)

For the steps of choosing the applicants, all of the six establishments in the project will also participate in choosing the students to study in this project. In the first step, the college will choose vocational certificate graduates who have grade point average at 2.75 up from electric, electronics, automotive and mechanic field. Then the representatives of the establishments will cooperate to choose only 35 persons and will accept to train in all of the six establishments for eight months. Studying expenses and allowance will be provided for students in this project. Students have to sign the contract to study in Dual Vocational Training and when finished, all of the establishments in the project will accept all of the students to work in the establishment. The salary starts at 25,000 Baht or all welfare included not less than 30,000-40,000 Baht. Today there are five generations of graduates, 35 persons

per a generation. It is currently opening to teach the sixth and seventh generations with 40 persons per a generation (Yuthapun Kotrapan, personal communication, February 7, 2015). Therefore, it can be concluded that the person who will pass the test and get to be trained in this project has to have high GPA because it is a national competition. The increasing number of scholarship students in 2013 and 2014 obviously suggested an expansion of labor demands in petrochemical industry.

However, it is noticeable that most of the applicants in this V-ChEPC project are students from outside the area. The number of applicants in generation 7 in 2014 is 92 persons, 20 from the area and 72 from outside the area. There are 60 persons who have passed in taking an exam, 15 students in the area and 45 students outside the area. There are 40 persons who have passed the interview, 10 students in the area and 30 students outside the area (the attached documents in V-ChEPC meeting 1/2015 August 20, 2015 page 3). However, it reflects an interest in vocational education of the people in the area and an indicator of income of people in Rayong province. As in a speech of Paron Issarasena na Ayudhaya, he talked about the origin of this project,

> At first the intention of the project is to give back to the locals but the locals aren't interested in it, They want to live in the city, live freely and they want comfort. We have to bring E-Sarn children to study. Students who are with us have to have soft skill which is knowing how to be a human, how to give. Besides, we teach them to have discipline because in the petrochemical industry, safety conscious is very important, so we have to train them in the real practice. (Paron Issarasena na Ayaudhaya, personal communication, October 13, 2015).

However, if we want to mention the successful factors of V-ChEPC that has been cooperated inseparably and continuously since 2008, we have to return to consider the background of the project thoroughly. In the first phase V-ChEPC was originated from the idea of the government by TMA Center for Competitiveness in 2004 and the Office of the National Economics and Social Development Board were the main agencies cooperating with other agencies in making strategies for developing

human resources to comply with the production and service section demands both quality and quantity in the next five years (2004-2009) by starting with 12 industries (Development Industrial Foundation News, 2010, p. 24). Then the process was supported by Dr. Thongchat Hongladarom, Chairman of Petrochemical Industry Group The Federation of Thai Industries (at that time described by the researcher) and Bandit Pattaweekongka, Secretary General in making the strategies to develop the capacity of human resources to compete with petrochemical industry. They also made a proposal about "The pilot project of additional education to prepare technical workforce (vocational education) to be ready for petrochemical industry" and established co-working committee between private sector and the schools to carry on the project. They also established committee for controlling and taking care of the project. Although after the Office of the National Economics and Social Development Board had accepted the proposal from petrochemical industry group and gave it to be a model and ways to survey the information from industry group in other 11 branches with the sponsored budget of 21 million Baht from the government in three years, coup d'état revolution happed. Therefore, the project was halted (Development Industrial Foundation News, 2010, p. 24).

Then the private sector renewed the project. Piphop Prucksamas, Director of the Petroleum Institute of Thailand, had packed this project and operated it under the strategic plan of the Petroleum Institute of Thailand and updated from the original plan. Activity is divided into two main strategies, short-term and long-term plans. The strategies completed on 28 December 2006 called "The action plan draft of the pilot project to develop Human Skills at technician level to improve efficiency, productivity and capacity of the industry." The total budget was 30.5 million Baht. The Board of Directors of Petroleum Institute of Thailand, Siwawong Jungcasiri was the President to approve the Petroleum Institute of Thailand to act as the main coordinator in supporting the preparation of personnel and colleges to be used as a model. The institute is responsible for the cost of the urgent need for it. (Development Industrial Foundation News, 2010, p. 26)

After that The Petroleum Institute of Thailand cooperated with the VEC to plan Training Project for preparing new technician graduates in a short-term curriculum. The curriculum takes five consecutive weeks and as an example of

success. Every student in the project had developed the knowledge and skills to satisfy all the companies. So, there are surveys in schools to find the potential schools to a college model in the pilot project. Deputy Secretary-General of the VEC discussed with Paron Israsena Na Ayudhya and decided to select Maptaphut Technical College to be a college model. (Development Industrial Foundation News, 2010, p. 27). The reasons are as follows:

1) Maptaphut Technical College is a small college. It can make changes more easily (there were only 500 students at that time) and it is less resistance than the big colleges.

2) Mr. Adul Korsem director of Maptaphut Technical College will be retired. So, it is a better chance to adjust to a new college director.

3) Maptaphut Technical College is located near the Maptaphut Industrial Estate which the entrepreneurs pay more attention than other areas.

At the same time Tongchat Hongladaromp, Chairman of Petrochemical Industry Club, the Federation of Thai Industries (At that time ---- extended by the researcher) invited the chief executive team of the petrochemical business such as SCG Chemicals Company Limited, PTT Chemical Public Company Limited, UBE Group Limited, Dow Group Limited and PTT AR limited for discussion and they all had agreed to fully support the project (Development Industrial Foundation News, 2010, p. 27). The conclusions were as follows:

1) All executives were pleased to be a joint committee with the government to manage the project.

2) All executives were pleased to give financial support which began in 2008 for a total of 10 million Baht per year. PTT Chemical gives three million Baht, SCG three million Baht, UBE and Dow Group Limited one million Baht each and other companies support the rest.

3) The team was willing to maintain the Fund at a level of 10 million Baht per year for consecutive three years (2008-2010).

4) The team would provide their factories to be training places with mentors and trainers.

5) They would consider providing a scholarship and support students in the community around the factory.

Before the Ministry of Education had an order No.295/2007 dated on September 12, 2007 to appoint Vocational Chemical Engineering Practice College" to manage the project officially and before a signing of a formal collaboration between the Office of Vocational Education Commission and the petrochemical industry on November 29, 2007 and after a joint meeting between the petrochemical industry, the Office of Vocational Education Commission and the Office of the National Economic and Social Development for starting the project "The development of technical competencies to improve capacity for competitiveness of the industry (petrochemicals the pilot project)", they invited Paron Israsena Na Ayudhya to be a Chairman of the Conference (Development Industrial Foundation News, 2010, p. 29).

In addition to the close cooperation between the public and private sectors in terms of management course, budget and coordinator as a committee, in practical, we found that a continuation of the coordinator both workplace and schools is also a critical condition to the success of the project Sema Poonwej, SCG Chemicals Company Limited, and Yuthapun Kodpun, Leader of petrochemical Maptaphut Technical, are the main coordinators since the beginning of the project as seen from the comments of Paron Israsena Na Ayudhya who had a role in driving the implementation of this project all along as follows:

> The condition for the success of the project is the Director (MTP Technical College. --- Extended by the researcher). If the director is with the project 100%, it is okay. If there is a change of the director, it will affect the continuity of the project. However, the most important element is the teachers who coordinated with the project. Master Yuthapun is responsible for this project from the beginning. He understood in Constructionism which focuses on soft skill and sobriety. Without him, we would be worse. He will take on accreditation exam. I have to talk to the VEC and ask the VEC to let him supervise the project further. (Paron Israsena Na Ayudhya, personal communication, October 13, 2015).

The human factor is the commitment, the dedication and the personal relationships between Chief Executive of Siam Cement Thailand and the former Chairman of the Federation of Thai Industries Paron Israsena Na Ayudhya, the founder and the president of Suksaphat Foundation including his appointment of this project as the consultant since the beginning of the project until now as can be seen from the comments of Siri Jirapongpun (Board of Directors project V-CHEPC and Director of the Petroleum Institute of Thailand --- expand by research). He discussed the roles of Paron (Development Industrial Foundation News, 2010, p. 6) as follows: “The success of the project was initiated by Paron Israsena Na Ayudhya. He has led the study process of Constructionism which is very much successful in the Siam Cement Group. He extended it to the outside with a blend of education term and the private sector."

Supachai Watanangura, Chairman of Petrochemical Industry Club, the Federation of Thai Industries (FTIPC) at that time (Development Industrial Foundation News, 2010, p. 7) spoke clearly that,

> At that time I took a position of Chairman of Petrochemical Industry Club, the Federation of Thai Industries. I had respect and faith in Mr. Paron Israsena Na Ayudhya, so when I knew that he wanted me to take part in the project to build technicians in the petrochemical industry by using "Constructionism" and the project would begin at MAPTAPHUT Technical College, Rayong. This college was in my area, so I accepted to help coordinate with the members of the support group in finance and personnel including an internship in the factory.

Paron Israsena Na Ayudhya discusses the origin of Suksaphat Foundation behind this success.

> The foundation started by the alumni network of MIT. The alumni network of MIT began a successful career. We discussed and decided to-found the foundation for the benefit of society. We help raise funds and ask for royal decrees from King Rama IX. At first the government agencies were not

> interested at all. They failed to cooperate with us. Although the privy had ordered to do it, the government agencies did not care for it. They were more interested in the government. Nonetheless, the government changed more frequently, so it is not going anywhere …We can pull the big companies to join in this project because they see the success of C-ChePC which make the cement Thailand save cost to many millions Baht per year. Then I made V-ChePC and I also took the insiders to help the work. There were 80 students in the project. We give scholarships to all the students. The problem is that now companies in the petrochemical industry started to move out of the country. (Paron Israsena Na Ayudhya, personal communication, October 13, 2015).

In conclusion, the success of the V-ChEPC project is resulted from the strength and the leading role of the private sector in the petrochemical industry in terms of mobilizing support from the entrepreneur within the petrochemical industry and driving the project continuously "by having the project management board and the committee with the leading industrial sector to be the leaders in industrial sector. Meanwhile, the school must adjust the administrative system to be flexible. It has to have learning process to the creative wisdom (Constructionism), development of critical thinking skills, upgrade courses or internships and learning to meet the establishment demands." including a commitment coordinated through personal relationships and individual acts of the former Chief executive of Siam Cement Group, Thailand and the former Chairman of the Federation of Thai Industries Paron Israsena Na Ayudhya. Meanwhile, the continuation of the incumbent college administrators including project coordinator both in schools and the workplace can affect the success of such a project, obviously. More importantly, we cannot deny the specific industry which has the capital of the enormous possibilities as well as the unity of the organization like the petrochemical company. Paron said in the interview, “The Institute of Petrochemical has the board all sit there in the meeting. When the meeting begins, we can agree or not agree right away and when the meeting is finished, we disperse to do our work as agreed in the meeting." (Paron Israsena Na Ayudhya, personal communication, October 13, 2015).

5.1.3.2 Dual Vocational Training Management between School and Entrepreneur

The college is unique and has been regarded as a model of education, e.g. Ban Khai Technical College, Rayong and Thai-Austrian Technical College, Chonburi.

Sattahip Technical College or in English called Thai-Austrian Technical College got the patronage from the Australian government and was far away from the center of the province, so it wasn't convenient to travel in the past. Therefore, Australian government built the dormitory before giving it to the Ministry of Education to take care in 1977, but still got a support in finance, machine equipment and experts until 1996. Nowadays the college cooperates with KREMS university and FRONIUS Australia (Sattahip Technical College (2016) or in English called Thai-Austrian Technical College) with the patronage from Australian government by giving scholarships to the students and providing boarding school management, so the college accepts only the students with excellent grades from other regions all over the country. As Wacharin Siripanich, the first student and the present director of the college said,

> I came here by grade. I was the first generation at Thai-Austrian Technical College. At that time Australia came to help. I was a country boy. I came from quota of RoiEd. I had to get 80% compared with now it is 3.5% up. At that time I studied here because my parents thought that this school was helped by foreigners. It is a boarding school, so they thought I must be very good at study because my old school was outside the district. I had to spend a lot of time traveling. (Wacharin Siripanich, personal communication, February 13, 2015)

However, nowadays the college cooperates with the private sector to establish the dual system project "Sattahip Model" under the mission "Users to think, Producers to determine, Under the context we are responsible" which means we cooperate to develop the curriculum and are responsible for the students. The establishments in the country participate and make an agreement with Sattahip

College such as Siam Michelin Co., Ltd., the Technology Promotion Association (Thai-Japan), Lions (Thailand) Co., Ltd., Ambassador Hotel Jomthien Chonburi, Denso (Thailand) Co., Ltd. Top Trend Manufacturing Co., Ltd., T B K (Thailand) Co., Ltd., UniqueC Products Co., Ltd. (Vocational Education, Education Commissioner and Senate, 2013, p. 15)

Furthermore, there are associations or professional organizations that are the representatives of industrial and service sector. These associations and professional organizations have responsibility to coordinate the government policy to comply with the private sector demands and cooperate to determine the professional capacity in many subjects in education system. These associations and organizations are as follows: National Science Technology and Innovation Policy, The Federation of Thai Industries, 8 Personnel Management Group Eastern Seaboard, Technology Promotion Association (Thailand-Japan), Thai Hotel Association Eastern Region, Thai Auto Parts Manufacturer Association, Thai Tool and Die Industry Association, Thai-German Institute, and Plastics Institute of Thailand (Vocational Education, Education Commissioner and Senate, 2013, pp. 15-16)

However, one of the outstanding characteristics of Sattahip Model and the successful condition of it is Dual Vocational Education in various forms by the establishment's demands.

> We have to build confidence with the factory that we can produce quality children. We have to talk to them. Director of the school has to have courage to decide and adjust the study curriculum to meet the establishment demands because each establishment demand is different and each establishment culture is different. So, we have to understand what the establishment wants. The management of the study in each establishment will be different too. We have to make a deal with the establishment clearly. What day to study at the school? How many days? How to manage the curriculum? Each establishment will be different and we have to follow them. We have to mainly focus on the establishment demands (Wacharin Siripanich, personal communication, February 13, 2015)

The details of the three models of education management (Vocational Education, Education Commissioner and Senate, 2013, pp. 16-17) are as follows:

S-Model means Education Plan of Sattahip Technical College, two years of curriculum for vocational diploma, can be classified to two models as follows:

Model 1 Studying in the school in the first six months and studying in the establishment for 12 months and the last six months studying theory until completing the curriculum of the VEC

Model 2 Semester 1 studying in the school Semester 2 4 studying in the establishment and theory holidays

M-Model means Education Plan Curriculum of three years continuing to vocational diploma called three years of vocational certificate plus two years of vocational diploma. Training in the establishment in vocational certificate 3 for six months in one year, when finished, students can continue to study in vocational diploma for two years. In the first semester, students study in the basic subjects in the school. In the next three semester students will be trained in the establishment and study in the holidays.

L-Model means Education Plan Curriculum of five years for students in vocational certificate 1 continuing to vocational diploma. In the first two years students study in the school and two years and a half later students are trained in the establishment and the last six months students study in theory to complete academic knowledge.

For the selection of the students to study at Sattahip Technical College in vocational certificate and vocational diploma, the college will consider from GPA. Students who want to study at vocational certificate level have to have GPA not less than 2.00 and students who want to study at vocational diploma have to have GPA not less than 2.50. Therefore, the college can have the quality students who are well-prepared with theory knowledge and practical knowledge and build the confidence for the establishments that they will get the quality personnels from the college to enter the labor market efficiently and successfully (Vocational Education, Education Commissioner and Senate, 2013, p. 18). However, for Dual Vocational Training, the college is more open to accept the students from outside the area. Director of the college said,

> Students who study in our dual system are not enough for the demands of the establishment. So, we have to bring them from North-Eastern network like Srisaket and Chaiyapoom. We contact the schools and tell them that the establishments in industrial estate want students. However, vocational certificate students from other provinces, we choose only ones with GPA 3.00 up around 3.4-3.5 up because if we accept 2.00, they can't keep up with the study. The factories have come to help us select the students and do the interview. Each year students in dual system are not equal like we accept 200 model students and the factories want 15. They will come and get the students by themselves. (Wacharin Siripanich, personal communication, February 13 2015)

Moreover, the success of Sattahip Model is resulted from Dual Vocational Training in the college which is the continuing research project of the National Science Technology and the Innovation Policy Office and other four agencies. The National Science Technology and the Innovation Policy Office is responsible for all policies and all studying curricula in KMUTNB. Lecturers in Faculty of Industrial Education will give assistance and manage the curricula and follow and valuate. Siam Michelin Co., Ltd. considers and analyzes about workforce demands. Sattahip Technical College produces the students. General subjects will be studied in the school. On the other hand, the college will analyze the curriculum of the VEC to meet the capacity of the establishment demands. What will be the contents of that capacity? Then the college will manage the study curriculum to meet that capacity and produce the students to meet and comply with the establishment demands and labor market demands (in one year semester accept only 21 students in Dual Vocational Training curriculum, 11 students in the area and 10 students from North-Eastern region) (Vocational Education, Education Commissioner and Senate, 2013, p. 18). In this curriculum management, Wacharin Sirspanich described in the interview,

> Now we teach a lot of theories. Some subjects we have taught. When students get to the factory, they do not have to use them. We are adjusting ourselves to

> teach the subjects that students can use in the factory. They do not have to study the subjects that they do not use in the factory. It is a waste of time. we have to cling onto the curriculum set by the agency. This is what we feel frustrated about but we have to adjust to it, both the VEC and the establishment. We have to manage the specific curriculum otherwise students aren't able to work in the factory. We teach main subjects but inside we put specification in the subjects we teach. If it works well, we will ask the approval to open a new curriculum (Wacharin Siripanich, personal communication, February 13 2015)

Moreover, before the first semester is opened, the four sectors will discuss about the curriculum together by considering from last year results. Then they will improve the curriculum to the standard. In the process the four sectors have to think about the changing of the technology and also analyze the workforce demand of the labor market and the establishment. They have to ensure the quality of the graduates that the graduates will have a job as soon as they graduate from the college and they are needed by the establishment. By the discussion of the four sectors, the results will be the conclusion of all sectors such as student manuals, teacher manuals and studying plan. KMUTNB will follow and evaluate the results of the study and the curriculum systematically. In the past students in Dual Vocational Training curriculum performed more proficiently than regular students (Vocational Education, Education Commissioner and Senate, 2013, p. 19).

Sattahip Technical College is located in the industrial estate surrounded by a lot of establishments and the conditions that many sectors thought it would be the successful indicator of the cooperation between school and establishment, However, from the interview of Director of this college, he provided a different point of view from his experience when he was transferred to accept the position.

> I have to talk with the companies. How will I say to make them want to work with me? I talk to the factories every day since I've been here for the first whole year. In the second and third years they come to talk to me instead. Until now I can choose the companies to work with. The companies who want

> to join us have to have moderate confidence with our college because they have to make a contract with us for at least five years. When they make a contract, they ask me that how long I will stay in this position because if I am transferred, they are afraid that the new director cannot do this. This is a problem that the companies do not want to make a contract with." (Wacharin Siripanich, personal communication, February 13 2015)"

Therefore, to be in the position of Director of this school since 2010 results trust from the establishment to make a cooperation contract. This fact has been confirmed by the study of Prachayanun Ninsuk and Panita Wannapirun. In the case of Ban Khai Technical College, it is the only vocational school that manages dual system 100% both vocational certificate and vocational diploma for 14 vocational fields. It has Best Practice. The college cooperates with 244 establishments divided into MOU in DS for 34 places and the training contract between Ban Khai Technical College and the establishment for 210 places. There are more than 100 trainers provided in the establishment both vocational certificate and vocational diploma (Prachayanun Ninsuk & Panita Wannapirun, 2013, p. 148). The two researchers have concluded the successful conditions of dual system in this college since 2000.

> Director of the college understands dual system thoroughly. He is on this duty for a long time and he is a local man. He understands the context and knows the community well. He dedicates for his community. Dual system for100% is different from other colleges. It is like an optional college, an original college and it is unique. The college is well-known and acceptable for community, so dual system in vocational education in the college is stable and flexible and adjusting to all sectors. All sectors solve the problems together, so the system is not halted. The system is continuous and stable. (Prachayanun Ninsuk & Panita Wannapirun, 2013, p. 152)

The latter condition is one of the many co-conditions that the two colleges use in managing a successful dual system and get rewarded to be super model of the VEC. The two directors of the two colleges also have a proactive role

which is the most important condition for dual system. Surachai Thamtaveekul and Thawatchai Bawornjitrungruang (2005) show the problems of vocational education in this industrial estate. They said,

> When analyzing the problems of technical colleges in the north-eastern part, we found that technical colleges in the north-eastern part cannot Break Through." This phenomenon is the main problem. The semi-official atmosphere made the workers hard to think of the creative ideas. They lack Motivation, so they are only Reactive not Proactive. Therefore, they cannot respond to the changing of the economy and the society (Surachai Thamtaveekul & Thawatchai Bawornjitrungruang, 2005, p. 31).

However, Factors of the success of the dual system in this industrial estate are a close cooperation between school and industrial sector and the continuation of manager and coordinator position especially in cooperation at establishment level that the director has to build an atmosphere of trust in the establishment as well as leadership in school which a part of it is "Trapped" in public system attached to the rules

Academic supports from the university and cooperation from The Federation of Thai Industries are important, but the most important and indispensable is the investment in management from the entrepreneur which can be a motivation for vocational students. In addition, it will make the system of remuneration by labor standard possible because when the entrepreneur participates in the training by himself, he will feel confident with the students' skill and be willing to pay wage in higher rate than certificate However, it also depends on the stability of this cooperation.

In the meantime, there is the dramatic shortage of students, so the college has to bring students outside the area to produce vocational skills to respond labor demand in the industrial sector. This is because students in the area are beginning to ignore vocational education as in the interview of the informants, Paron Issarasena na Ayuddhaya and Wacharin Siripanich. Director of Ban Khai Technical College reflected the same problem.

> As we are in the industrial estate, people have high income. When they have money, they want their children to study comfortably. They want their children to get a high education. Rayong students are less here. Mostly students are from outside of the area. Therefore, it causes the problems of passive population and population concentration from the North and the Northeast. When they can settle down and have a higher income, they bring their family here but they do not bring their house registration documents with them. The students here, half of them are outsiders. When they see working in the industrial sector is good, they let their children to study in vocational education. If we open Higher Diploma of Technology, it can induce them to study more which is good because people in the area are rich, they won't let their children to study. I think it is good that outsiders come to study here because only students here are not enough. (Kamon Choomchareon, personal communication, February 6, 2015)

For vocational education management in dual system in vocational schools outside the industrial estate and the establishments and from the interview of the person who was responsible for dual system project of Honda Automobile Thailand Co., Ltd., it could be concluded that there was still not much. Although Honda had proceeded the project for 22 years but there were not more than 20 schools participated in the project and although there were 3,200 participants in the project. As in the interview,

> Honda had managed DVT since 1994 with 15-16 colleges. We built our college to meet our own skill demands. But later we could not do it because the compulsory curriculum of the VEC (in the same meaning with Wacharin, he gave the interview before about strict plan of the regular curriculum—described by the researcher). Now the Automotive Industrial College still managed the dual system 100% which I thought it would be a good opportunity for poor children living at the border of the country to enter vocational schools. (Pairatch Peungoung, personal communication, August 27, 2015)

However, in accordance with the number of participants in the project from colleges in 2015, they were mostly from vocational colleges in the north-eastern part. However, the participants were rather low when compared to the participants from Ayuddhaya province for fifty-fifty. When considering from E-Sarn Technological College Udonthani, there were more than 136 participants.

Table 5.5 The List of Colleges Under the Cooperation Contract on Dual Vocation System with Honda (Thailand) Co. Ltd.

College	Province	Amount
1) Automotive Industry Technical College	Prenakornsriayuthaya	254
2) E-San Technological College	Udontani	54
3) E-San Technological College 2 Kumpawapee	Udontani	82
4) Prachinburi Technical College	Prachinburi	18
5) Seka Industrial and Community Educational College	Bungkan	16
6) Ko Ka Industrial and Community Educational College	Lumpang	41
7) Punnanikon Industrial and Community Educational College	Sakonnakorn	27
8) Chiang Rai Industrial and Community Educational College	Chiang Rai	14
9) Hautapan Technical College	Aumnatchareon	23
10) Udonthani Polytechnic College	Udontani	9
11) Satuk Industrial and Community Educational College	burirum	20
12) Pau Industrial and Community Educational College	Nan	17
13) Kumpawapee Industrial and Community Educational College	Udontani	17
14) Srisaket Technical College	Srisaket	In Process
15) Kasetvisai Industrial and Community Educational College	Roi-et	In Process
16) Singburi Technical College	Singburi	In Process
Total		**592**

For the rather low proportion of the participants from vocational colleges in the north-eastern part, Kittipong Reungkon Coordinator of the dual system project in Sakonnakhon Technical College said,

> In Thai culture Thai children aged 15 years old do not want to work. City boys and girls are still living with their parents while country boys and girls are not living with their parents but they live with their grandparents. Their parents work in the different area and send them money. Parents give their children what they want because they are afraid that their children will get mad at them because they let them to live with their grandparents. Children get easy money, so why they want to work. Parents do not want their children to feel uncomfortable. So, children nowadays are like they are paid to study. They love their friends. They depend on their friends. When their friends persuade them to train, they agree with them. When the company comes, they sign to the training. However, when the company sends the company vehicle to pick up them to the training in Bangkok, they are disappeared. They are not coming. Some years they signed their names 50-60 names, when the time comes they go only 10. (Kittipong Reungkon, personal communication, September 3, 2014)

E-Sarn Technological College Udonthani was successful in the dual system because of the policy and intention of the director as in the interview,

> For dual system I contact Honda at Rojana Industrial Park. I have done it for over 10 years. I had done it before the Ministry had the policy of dual system. I checked the factories myself after I had sent my students there. Are they actually training my students? Is it safe for my students to go there? Then we could begin to talk. I focus on the dual system in vocational diploma with the Japanese factories because I want my students to be trained with high technology. In addition, Honda focuses on the culture of the organization, discipline and patience which are the dominant characteristics of the Japanese. The philosophy of Honda is “We get from the society. We give back to the

> society. So, I think they want to build people, not only labor. So, we've been doing the dual system with them all along. The children who come to study here, they know that they have to study until they finish diploma. I call my curriculum five years of diploma which is three years of vocational certification in the school. The fourth year they will be trained in the establishment and the fifth year they are back to study more theory at school. However, in large establishments, they want students to train in the last year of the education, so they can select students to work in their companies. However, I want my students to know themselves, work hard and dedicate themselves from their experience in working. When they are trained, they get the money. This makes them to know the value of the money and be proud of themselves. For vocational students they do not only study in the school, but they will get the training after the end of the semester in the first year for a month. I want them to know themselves. I want them to know what they are good at, what their capability is, so it can make them to develop themselves in accordance with their skills and it will be the preparedness for them before they have a real training in the fourth year. This is my dual system, a Thai dual system "E-Sarn Model". (Anupong Makaranon, personal communication, July 17, 2015).

However, the success of "E-Sarn Nua Model" was mentioned by Somkiat Tangkitvanich Chairman of Thailand Development Research Institute TDRI in the TV program "KidYokKamLangSong" in ThaiPBS July 28, 2015. As a successful vocational education college and a sample case of the dual system, he said,

> The college can make a project with a famous Japanese company because at first the Japanese factory thought that we are a government college. However, after we'd worked together, the company was impressed with students in this college. We had prepared our students in vocational certificate for three years, so when students enter vocational diploma, we sent them to the factory. In this case we are successful because we pay attention to the quality.

In addition, an interview from Pairatch Peundoung one of the companies that managed dual system with this college had confirmed the information from Chairman of TDRI clearly,

> Normally in the dual system, we will provide a chance for vocational colleges more than technical college for giving a chance to poor children from the border of the country. I use connection to coordinate like I am the alumnus of this college. I work here and when I have a chance I suggest my junior to come here." (Pairatch Peundoung, personal communication, August 27, 2015)

Besides, Pairatch is the one who coordinated from the beginning of the project.

However, apart from the factors in the success of cooperation between school and establishment, the personal factors are also important, especially in the professional success, social acceptance and personal relations which actually reflect Thai society. On the other hand, the stability of cooperation like this (attached to personal factors) may also affect the project to be halted or ended. Nonetheless, this kind of relation is a communication way in policy that has a power in Thai society.

Besides, from many researches of the study of cooperation between public sector and private sector in vocational education management in dual system, some of the researches pointed to the limit of law for dual system in vocational certificate. It is precarious to the labor legislation which is prohibited for the youth under 18 years old to be employed including the maturity of the youth in those ages and the readiness to enter a world of working. So, the private sector is worried about the dual system in vocational education in this level. Therefore, many sectors manage the dual system only in vocational diploma as in the comments of Pairatch Peundoung the coordinator of the dual system project of Honda. However, when considering "the dual system project in the establishments of the federation of Thai Industries to support Education Budget Foundation Project", it totally reflects the different image. The project was handled by The Human Capacity Building Institute under The Federation of Thai industries in the cooperation with the three armies, the VEC, the OPEC in coordination with The Privy Council Chambers which want to focus on

solving the problem of the fighting between vocational students by the royal thought of King Rama IX. The coordination from The Privy Council Chambers through Weerasak Wongsombat Former Secretary-General of the VEC before transferring the coordination to the Federation of Thai Industries through Thawon Charatthien Director of TMA Center for Competitiveness to solve the problem of the fighting since 2013, the center has the pilot project of five years (2013-2018). While Pre.Voc.Ed for first year vocational students of Royal Thai Navy Academy to solve the problem of the fighting at Sattahip Chonburi happened in 2014 (the dual system The Human Capacity Building Institute)

However, to solve the problem of the fight in vocational students, the project determines a target group of the second year students. From the interview of coordinate officials about the background of the project, we found that the project has been studied before and the dual system in that level will pull the target group of students out of the senior-junior system that risk causing the fight in Bangkok Metropolitan Region. Moreover, students who want to participate in the project, parents have to make a contract of understanding with the establishment and the schools. Therefore, the establishment won't be worried about the law. The dual system will be arranged in the second year of the vocational students all year long. Second year vocational students who participate in the project will be in the establishment from June to February and from February until March. It will be a review of many subjects with supervision teacher in the establishment. Before training in the establishment, students have to be trained about discipline and ethics in barracks for two weeks. When they are trained in the establishment, they will get compensation at least half of the minimum wage which is 150 Baht. The establishment must not treat students in the project as they treat with their officers. For participating in the project, it will be by the willingness. After the institute has announced to the members of the Federation of Thai Industries and the members has participated in the project. Those establishments will receive award of honor from privy. This is part of the award of honor activity of the private sector and the establishments. Each year 30-50 establishments will participate in the project and 15 schools in Bangkok Metropolitan Region such as Bangkok College of Industrial Technology, Min Buri Technology College, Technology Bangkapi College,

Pathumthani Technical College and Don Muang Technical College will also participate in the project. All of these schools are the schools that often have lists of the fight. In the first year there are nine institutes, 33 establishments and 234 students participate in the project. 212 students have passed the test; mostly they are in mechanic, electrician, electronic technicians and construction worker.

Three privies are responsible for vocational schools in different areas. Admiral Chumpon Patchusanon is responsible for vocational schools in his area. Air Chief Marshal Chalit Pukpasuk is responsible for vocational schools in Pathumthani and some areas in Bangkok. General Surayuth Chulanon is responsible for vocational schools in Bangkok and Samutprakan (The Human Capacity Building Institute, The Federation of Thai Industries, 2016).

5.2 The Analysis of Ways of Industrial Production Under Cooperation between Public Sector and Private Sector: Practical Level

When considering the success of cooperation between the public and private sectors in the production of vocational skill, Busemeyer and Trampusch (2012, pp. 14-15) mentioned in Chapter 3 that the system would happen under the four conditions as follows: 1) Private sector has to have roles in the preparedness and the vocational skill training management 2) There should be intermediary association provided 3) Portable vocational skill and labor skill are approved including a clear standard and acceptance from labor market of the country 4) The vocational education management is provided both in school and in establishment. The student in a status of an employee of the entrepreneur in the dual system management, the vocational education in dual system in Thailand nowadays is in connection with that production system which German has been the model in some parts in the conditions 1 and 4. Therefore, the conditions 2 and 3 are the conditions that are related closely and involved with setting of each society, so it is hard and takes time for Thai society.

Beginning with the third condition that portable vocational skill and labor skill are approved including a clear standard and acceptance from labor market of the country involved with the things that Busemeyer and Trampusch (2012) said before in the part of the participation level of private sector or each establishment in

apprenticeship by the willingness that it is the condition to determine of labor skill which will be general skill or specific skill as in the message that is the more the entrepreneur gets involved with the system, the more specific training he will get. The more the entrepreneur pays attention to the vocational skill production, the more willing he is in the investment in producing various skills and can be applied to the various jobs (Busemeyer & Trampusch, 2012, p. 12). In the case of Thailand, the strength of the willingness of cooperation will happen only in some industries and must be the large industries that have high technology and high investment like the automotive industry, or the petrochemical industry which take specific skills and capacity. However, large industries in Thailand are medium industries and SMEs, so they lack potential

This condition related to the second condition in intermediary association is that the countries that used this vocational skill production system, although they are different in the historical background, when considering about their economy system, they had the organizations since the middle age before Industrial Revolution named guilds. Guilds were social partners that had grown, developed and adjusted themselves to the society, economy and politics all along until they were highly accepted in that society. Guilds had duties in determining the vocational skill production system and labor standard approval for people who would like to work in that profession. Today they are trade associations (Busemeyer & Trampusch, 2012, p. 12). However, in Thailand there has never been that association before and the labor standard approval has not been accepted because it sees more value in the certificate. In addition Thailand Professional Qualification Institute has just been established in 2011, there has been a question of reliability. Anek Laodhammathas explained the limit of bringing the vocational skill production system of Germany to use in Thai society that,

> Guilds of industries are self-government. In some places they have their own law. They have their own rules and regulations. Guilds of industries of craftsmanships will have duty to assure the quality and check the quality of the work. They also have duty to determine prizing of goods' price. They have duty to give apprenticeship to the new ones and the new ones have to take the

> exam to get certification to be able to do the job. It is not free market of labor of entrepreneurships like in nowadays. It has to pass guilds, so guilds can scrutinize, train and certify that this person can get the profession or not. Therefore, when we bring the Germany's curriculum to use, it can be use a little because our handicraft and industry have just begun. We do not have these traditions. (Anek Laodhammathas, personal communication, September 8, 2016)

In conclusion, ways to build cooperation between school and establishment, the government has to give opportunity to the private sector to have the leading role and independence for building confidence in the investment in the vocational skill production. The government has to build motivation by tax measures and the limit of the law reduction such as labor legislation in labor age and vocational training, and determining tenure of the director and the coordinator at the minimum of five years for the continuation of the management. In addition, incentives for the practitioners are also important such as academic standing promotion or special funding for successful schools. The director has to have vision and leadership. He has to have courage to decide and adjust the curriculum to be convenient and meet the establishment demands, and that will lead the way to Trust. The entrepreneur has to assume the high costs in the dual system management, but it is good to build motivation for vocational students. In the long run, if the establishment sees the benefit of cooperation in the labor production, it will make the compensation system by labor standard more possible in practice. When the entrepreneur participates the vocational training by itself, it will feel confident with students' skill and be willing to pay the wage higher than their certificate. Importantly the cooperation and the academic support from Institute of Scientific and Technological research, leading universities and cooperation from various vocational organizations to determine vocational capacity closely like this, it will make that capacity standard.

Importantly besides the factors affecting the success of cooperation between school and establishment, personal factors are also important especially from the success in the career, social acceptance and personal relations as in the role of Paron Isarasena Na Ayudhya. He has a working experience in the leading organization of

the country like Cement Thai Group for along time and is also appointed many important positions in a circle of education and industry such as President of Suksapat Foundation, President of Darunsikkhalai School for Innovative Learning, KMUTT, Honorary President The Federation of Thai Industries, Consultant of Education Commission The Thai Chamber of Commerce and Committee of TMA Center for Competitiveness which obviously reflect the special characteristics of Thai society. On the other hand, the stability of cooperation depending on personal factors may result in ending or halting the cooperation. Therefore, this kind of relations is thought to be the ways of communication in policy that has a lot of power in Thai society.

However, for the production of industrial technicians, it has the problem of the age of vocational student which below 18 years old with the limit of labor legislation. The context of Thai society does not understand and pay enough attention to the vocational education management in the dual system, and it begins to question about the low cost of the labor. The researcher thinks that it should have the dual system in vocational education in five years of diploma. However, the college may choose M-Model or L-Model of Sattahip Technical College that is the curriculum for five years of vocational certificate continuing to diploma. Students study two years in the school, two years and a half in training in the establishments and the last six months in theory for a complete academic college. Otherwise, the college may choose to manage like “E-Sarn Nua Model” of E-Sarn College of Technology which arranges three years of vocational certificate and training in the establishments in the area during the end of the semester for a month for making the students know their capability and preparedness for training in the fourth year. Another option is that students in the first year of diploma train at the establishments in the industrial estate at the fifth year or students in the second year of diploma are back to study more theory at the college before graduated.

To solve the proportion of students stably and beneficially to students who are the youth of the country, we should focus on the professional guidance system. In the case of Ban Khai Technical College, Pratchayanun Ninsuk and Panita Wannapirun (2013, p. 151) concluded that the professional guidance system is giving information for further study in junior high school and in senior high school. The establishment will go to the college and give the guidance to the students and uses the graduates in

its establishment to be a successful example in the dual system. In the case of E-Sarn Technological College, it uses a successful senior to guide the junior. It is a building of a new value in the society about studying and working which emphasizes on education for getting a job, not education for a certificate. The college points out to students and parents to see advantages in vocational education because they can study and work at the same time from diploma until higher diploma of technology. Besides, the dual system also develops the maturity of the students in working and living in the society. Students will be proud of themselves that they can make money to support themselves and their family. Moreover, when they have to spend time both in studying and working, it could reduce the chance of starting a fight.

However, another factor to clear the conclusion of the success of the dual system that must depend on the location (near Bangkok), sufficiency of factory, convenience of transportation and GPP of Surasak Thanoothong in accordance with Pratchayanun Ninsuk and Panita Wannapirun (2013, p. 151). Pratchayanun Ninsuk and Panita Wannapirun said that one factor that makes Ban Khai Technical College accomplish in the stability of the dual system is the college located in the industrial estate. There are many establishments in the area that need labors and skill workers, so it is a good chance that students in the dual system can be trained and work there continuously and lasting. Although it is an important condition, it is not enough as in the personal communication of Wacharin Siripanich,

> I have to talk with the companies. How will I say to make them want to work with me? I talked to the factories every day when I was here in the first year. Nevertheless, in the second and third years, they came to talk to me instead. Until now I can choose the companies to work with. The companies who want to join us have to have moderate confidence with our college because they have to make a contract with us for at least five years. When they make a contract, they ask me that how long I will stay in this position because if I am transferred, they are afraid that the new director cannot do this. This is a problem that the companies do not want to make a contract with.

Therefore, the success of the dual system does not depend only on the sufficiency of the establishment and the location of the school in the industrial estate, but trust between school and establishment in management is also important

Besides, GPP is also one of the conditions in the success of the dual system. When people in the area have more income, they want their children to have a higher education. They do not want their children to feel uncomfortable and work in the factory. Therefore, we have to bring children from outside the area. The main informants specify in the same points that they have to bring children from the Northeast part to study in the area because people in the area ignore to study in the vocational education. At this point although we have solve the problem of shortage of input, there is a negative result in the move of labor out of his hometown both the abandoned settlements and population concentration in a new location

In the meantime, the birth rate is decreasing, so the researcher thinks we should focus on the productivity simultaneously with production and skill development.

However, the VEC and the involved do not bring the successful results of the project to synthesize to be a lesson and concrete. If there is a changing of a project coordinator or a school director, it will affect the continuation of the project or the project can be halted as mentioned by Paron Issarasena Na Ayudya.

CHAPTER 6

PROBLEM AND SOLUTION OF THE INDUSTRIAL TECHNICIAN PRODUCTION

Education is public goods that government has to distribute and service. Vocational education is public service. It is important to industrial development in an overall country. Moreover, it is necessary to receive cooperation from the private sector in practical like in the developed countries with industry advances such as Germany, Japan, South Korea and Singapore etc.

However, in the case of Thailand, cooperation between public sector and private sector is rather low. Mostly it is cooperation between school and establishment. However, cooperation between industrial sectors themselves is only in large investment industries such as the V-ChEPC between Maptaput Technical College and Petroleum Industry Group. It reflects strong potential in the cooperation through the central organization which is Petroleum Institute. It helps to cooperate in the cooperation because it also wants good quality of labors for itself. When there is a pilot project, everyone is satisfied with the result. Therefore, the cooperation goes on. In this point, it reflects Proactive role for school to seriously produce industrial labors. In addition, the leading role of the industry intermediary may reduce problems and obstacles in public system and political system because it is an aggregation of large establishments. They are stakeholder in this relation.

Although education is public goods that government has to have a leading role in distribution and service, the failure from vocational education management to meet the industrial sector demands in the last three decades proves that the government cannot manage the education for the society to realize how important it is to drive the successful economy. It causes a question whether it is time for the government to consider and review itself in managing vocational education and let the private sector to be a part in producing industrial technicians systematically. Not only can it be one of the resolutions to solve shortage of industrial technicians both quantity and quality, but also it can lead to an increase of capability in the competition in the country.

Therefore, in this part, we will discuss the relation between involved sectors in production and development of industrial technicians in policy level in Thailand both in the government itself and between government and private sector for further understanding of the real problems in industrial technician production in the country.

6.1 Change of Minister of Education and Continuation of Policy

Aside from the problem of political instability, change of Minister of Education is also a problem. From 1999 to 2014 Thailand had 16 Ministers of Education; an average was a person per 10 months. Civil government of Yingluck Chinnawatra had four Ministers of Education. The three former Ministers of Education were in the position for an average of seven months a person. An often change of Ministers of Education and policies lead to the discontinuation of policy. Before Thairakthai Party came, Thai politics had faced instability of government because it was a coalition of parties. Therefore, there were a lot of changes in the cabinet in each government. As in the case of Minister of Education, Ministers are from many parties which obviously caused discontinuation in policy.

Although Thairakthai Party came to administer the country with the highest votes in House of Representatives, the problem of change of Minister wasn't over. At this point we could not avoid seeing that it was because the Ministry of Education was a big ministry that had received big budget allocation. The problem still reflected that the government did not give education a priority although it was important to develop human resources which were the foundation of the country. Until the government of Abhisit Vejjajiva came, the government was responsible for education itself and change of Minister of Education was not frequent as before. Jurin Laksanavisit was in the position for two years. Chinnawon Boonyakiat was in the position for almost two years before Abhisit Vejjajiva's government dissolved the parliament to arrange a new election. Therefore, it made disruption in the continuation of education again as in the case of vocational education act and the establishment of vocational institutes.

In the case of the establishment of vocational institutes for producing engineer at practitioner level, Jurin Laksanavisit (December 2008-Janaury 2010) and Chinnawon Boonyakiat (January 2010-August 2011) (2 Ministers from the

Democratic Party government at that time) saw that it was a primary issue and would be a resolution to solve shortage of industrial labor in the country. An upgrade to university education called "Vocational Education Institute" would be a more inducement for students to study in vocational education because of the value of society. It emphasized that children should finish bachelor's degree. Therefore, "Vocational Education Institute" would open a chance for students who had finished vocational education to further study at bachelor's degree correctly to their fields and skills as previously said in the vocational education act 2008 section 16 and 9. However, the vocational education act 2008 in section 13 and 14 said that vocational committee has authority to determine guidelines in establishment, summation and separation of vocational schools or institutes. Summation of vocational schools to establish the institutes can be done by an advice of the VEC and has to realize the coordination and cooperation to maximize the benefits in using existing resources. However, it is followed in ministerial regulations.

However, when there was the change of government, Jaturon Chaisaeng, Minister of Education, opposed to it. Nevertheless he agreed to increase the number of students in vocational and diploma certificate. Finally he couldn't resist claims from the administrative departments. Therefore, nine institutes were approved to be established while the VEC proposed 10 pilot schools and three former ministers from the same party did not oppose the proposal.

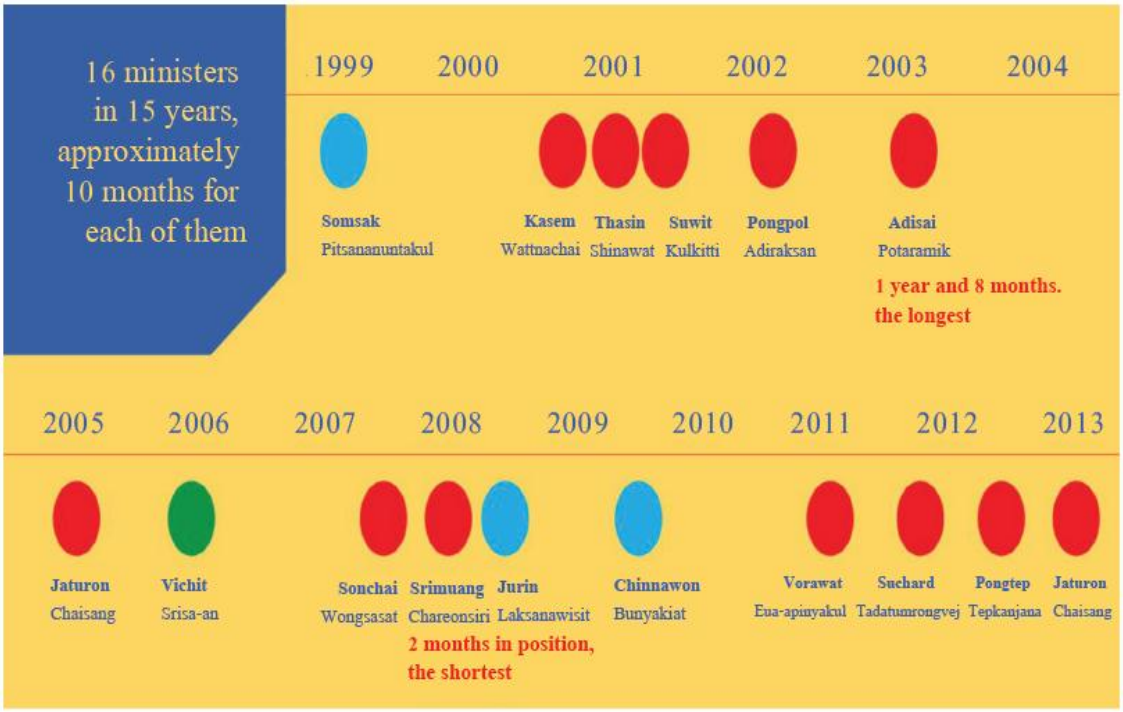

Figure 6.1 List of Ministers of the Ministry of Education from 1999-2013
Source: Pokpong Chanwit & Supanat Sasiwuttiwat, 2013, p. 10.

However, the issue of vocational education institute establishment in category 3 in the Vocational Education Act 2008 had been reflected a long conflict within the VEC. After the Education Act 1999 was enforced, there were various reforms of education. In section 43, the government will arrange the basic education for 12 years without fees. The Education Act 1999 and the additional amendment section 16 divided education into two systems which were basic education and university education. Moreover, it divided university education into degrees and lower degrees, so vocational education had to be managed both basic education and university education

Then after an announcement of Administration Act the Ministry of Education 2003, the authority of Department of Vocational Education was transferred to the VEC which was published in the gazette on July 7, 2013. While the idea of vocational institute establishment began in 2002 as you could see that the Ministry of Education had organized and proposed the Vocational Education Draft B.E.…in section 20 of

National Education Act of 1999, the cabinet considered and got an approval on October 8, 2002. When the draft had passed the consideration from the Office of the Council of State, The draft would be sent to Coordination Committee of Parliament before House of Representatives to consider further (Cabinet Resolution, 2003)

Then in the following year the draft had been discussed and rectified many times both in House of Representatives and Senate. When the cabinet proposed the draft to House of Representatives, there were also the same five bills which were Prakob Rattanapan and Board (Democratic Party) Pachathippatai Kamsingnok (ChatPattana Party) Pongpit Roungpao and Somchai Chatrapatanasiri (Chatpatana Party) Umnou Klangpa and Police Lieutenant Colonel Waipoj arpornrat (Thairakthai Party) and the last draft was from Nattawut Prasertsuwan and Chansak Chawalitnitidham (Chatthai Party). In 2005 this draft had been additionally corrected by Senate but House of Representatives voted of disagreement, so there was an appointment of joint commission to consider the draft, 12 persons per parliament (report of joint commission to consider the Vocational Education draft B.E. … Report of the Joint Committee on Vocational Education Act, the House of Representatives, 2006, p. 1). Then the Vocational Education Draft was considered again by The National Legislative Assembly in the late 2007 before officially announced on February 25, 2008 in the government of Surayut Julanon which was the government statement appointed by the National Council for Peace and Order (NCPO) after coup d'état in 2006. The reasons to announce this act were,

> Vocational education management and training are the process and workforce development to increase products and to promote the economy and technology development of country to meet global standard, so people can be self-employed and depend on themselves. There should be vocational education institutes which are public institutes that have degree and corporation under the VEC. Moreover, the vocational education management and training should be unity in policy and decentralization to practical level for quality and efficiency of students and university students which will be comply with the National Economic and Social Development Plan Therefore, it is necessary to enact this act. (Vocational Education Act 2008).

Although we could not find out why the act was in the discussion of House of Representatives itself and between House of Representatives and Senate, it caused the enactment to be prolonged for six years. However, from the amendment of Prakob Rattanapan (Democratic Party), we could primarily assume that it could be a party's political benefits. The act would affect the government official group which was a large supporter in the country. Prakob said,

> Although the Vocational Education Draft has passed period 1 and the commission is set to consider the draft in each section, there would be a few problems to that because some sections of Vocational Education draft are connected to Government Teacher and Education Personnel Draft B.E. 2547 (2004) which is the main law. I can say that there are sections that are connected. I am not sure that what will be the effect if the draft has been passed because actually Government Teacher and Education Personnel Draft should be finished before considering other involved drafts. (Secretariat of the Senate, 2007)

The heart of Vocational Education Act 2008 is the VEC's management of bachelor's degree or the establishment of vocational institutes. It shouldn't be the issue that political parties should bring to discuss and oppose to each other if they do not want to lose popular votes and be the political target of the opposition. However, the establishment of vocational institutes takes a long time. It takes three years for vocational institutes at agriculture and it takes six years for other purposes of vocational institutes because of the conflict within the VEC itself.

When Theerawuth Boonyasopon, Director of KMUTNB, was the president of vocational education commission, he had announced the regulations of aggregation and separation of schools for establishing the vocational education institutes in 2011. However, it was opposed by Sasitara Pichaichannarong, Secretary-General of Vocational Education Commission. The President of Vocational Education Commission confirmed the resolution to establish vocational institutes in 19 provinces. He said that first there should be 10 pilot institutes with bachelor's degree in practical before the semester started in 2011 or May 2011 because if bachelor's

degree in vocational institutes could not be opened in 2011, vocational students might turn their interests into other studies. However, vocational institutes not only focused on bachelor's degree, but also built the strength of vocational education. On the other hand, Sasitara Pichaichannarong, Secretary-General of Vocational Education Commission and Administrative of the VEC (June 23. 2010 – September 30 2011 - - - extended by research) asked for the Council of State to slow down in considering the ministerial regulation draft of aggregation of vocational schools to establish vocational institutes because she wanted to improve it first. She said, "I acknowledged the resolution of Vocational Education Commission, but as an operator, I had to consider in an executive side whether it was possible to do it or not. I had pointed in the meeting that we could establish vocational institutes within March 2011, but how many of them to open, I still did not know. However, the open of the study in bachelor's degree in May 2011 could not be in time because there was no curriculum and we did not expect the budget. Besides, the number and quality of students were not achieved with the target. However, bachelor's degree should be opened in professional fields in the future." She also repeated, "For the establishment of vocational institutes, we have to look in the three main poles which are the VEC as the Administrative of the Board, the Vocational Education Commission as the Policy Determiner and Deputy Minister of Education as the director and supervisor. It should be from everyone's ideas not anyone's ideas." (Thai Post, 2010).

Teerawuth Boonyasopon said in the meeting about a half-seriously talk of Professor Somchai Wuthapreecha, the committee in Vocational Education Commission, in an effort to establish the vocational institutes

> The bomb is a joke from Professor Somchai Wuthapreecha, former permanent secretary and current committee. He thinks that the delay in establishing vocational institutes for two years is because of the political sides, so he brings an example from the past that vocational and diploma students protested and required for Department of Vocational Education to open bachelor's degree curriculum and they threatened to throw large fireworks at the Ministry of Education, so in the next day the government abode. (Thai Post, 2010)

Although by the law, the administration of the VEC is in the committee form which the Vocational Education Commission is the supreme organization and the secretary-general of the VEC is the secretary-general and administrator in practice, in this case it seems that the VEC tries to order and follow the policy and plan of its own and does not care about the policy of the OHEC. However, the claim about no quality and quantity of students isn't far from reality. The VEC tries to centralize power and preserve power, though the vocational education act emphasizes on the decentralization to schools. However, the government's policy obviously complies with the administrator of the VEC's action as in the opposition to the establishment of four pilot vocational institutes of the Ministry of Commerce. Korn Jatikkawanich Minister of Education gives his opinions, "it is the establishment of a new agency, so it will make the government take on more budgets such as office expenses, salary, emolument and personnel pay. The cabinet resolutions on September 7, 2010 agreed to expand time for the suspension to establish a new agency. Therefore, the proposal for four pilot institutes is not followed and approved by the cabinet resolutions." (Daily News, 2011a)

Then in June 2011 Chairman of the VEC sent a petition of "An abuse of function of Secretary-General of the VEC in the subject 'the establishment of vocational institutes without the regulations of law' "to Education Commission Senate. From the case of Secretary-General of the VEC, she had been processing to establish four specific vocational institutes even if Vocational Education Commission had a resolution to establish in provinces. At this point the opposite action of Sasitara Pichaichannarong should be noticed. At first she claimed that the budget and the procedures were not ready. Finally Education Commission Senate had consensus that it was an abuse of function but there was still no sue for her. In September Kitti Atsawapattanakul and Soontorn Janepipat, the Professionals of Vocational Education Commission, were the plaintiffs to sue Sasitara Pichaichannarong, Secretary-General of the VEC, at Criminal Court in the subject of the abuse of function of the government official. She had sent a letter to Secretary-General in the Office of the Council of State for a slowdown in considering the ministerial regulation draft about the aggregation of vocational schools to build the vocational institutes by the resolution of cabinet on November 3, 2009. She claimed that it is in the process of

considering and reviewing of the establishment of institutes despite that she had no authority and agreement from Vocational Education Commission, so it caused a slowdown in the establishment of institutes by regulations and procedures in the vocational education act 2008. Besides, Sasitara Pichaichannarong also wrote a letter to Minister of Education through Deputy Minister of Education asking for the Ministry to withdraw the ministerial regulation draft arbitrarily. She also abandoned the duty by not informing the schools and agencies about the announcement of regulations of aggregation and separation of schools for establishing the vocational institutes by the resolution of Vocational Education Commission signed by Chairman of the board on March 9, 2011. However, the most important thing was she intentionally proposed to the cabinet to establish four specific vocational institutes without the agreement and without the readiness assessment from the Vocational Education Commission in section 11(2) of the Vocational Education Act. Therefore, it caused the Office of the Council of State to return the ministerial regulation of the establishment of four specific vocational institutes (Daily News, 2011b). The performance of Secretary-General of the VEC showed the dissatisfaction to the policy of Vocational Education Commission. It also implied the resistance to that policy.

Then the Vocational Education Commission had agreed to establish vocational institutes in provinces or Area Based by assigning the committee which consisted of representatives of The Thai Chamber of Commerce, representatives of The federation of Thai Industries, representatives of the Office of the National Economics and Social Development Board, representatives of the Office of the Education Council, representatives of the OHEC and representatives of the OBEC consortium. Sak Kongsuwan was the chairman in studying the details of people and establishment demands before further proposing to the cabinet. About the agreement on the establishment of four specific vocational institutes, Worawaj Ueapinyakun Minister of Education said, “right now all has failed because we will move forward to establish vocational institutes in Area Based by the resolution of Vocational Education Commission. I will propose the issue to the cabinet to review next.” Meanwhile the conflict between Vocational Education Commission and Sasitara Pichaichannarong, Secretary-General of Vocational Education Commission has spread all over, so many committee members confirm not to work with her especially Nutty Pukkayaporn, a

professional from private sector who asked for a change of position of Secretary-General of Vocational Education Commission (Thairath, 2011).

Then the VEC assessed vocational schools to participate in the establishment of vocational institutes and proposed the ministerial regulation draft of aggregation of vocational schools to establish vocational institutes B.E. … through the cabinet on January 15, 2012 before announcing it in the ministerial regulation in the government gazette on June 27, 2012. It was an establishment in Area Based by the resolution of the VEC under the supervision of two ministers; Worawaj Ueapinyakun and Suchart Taradhamrongwej. It would begin Higher Diploma of Technology or in practice next year and now 161 vocational schools are ready to be 19 vocational institutes in 19 provinces. However, the procedure took more than seven years.

However, Kitti Limskun, former advisor of Minister of Education, Jaturon Chaisaeng (June 2013-May 2014) talked about the reasons to establish vocational institutes that

> Look into the contents of this law. It is not Higher Diploma of Technology. It is more like a general education. So, we should open it or not. Rajabhat University has opened a lot of it. Vocational directors want to open it because they want to upgrade their rank. (Kitti Limskun, personal communication, July 24, 2015).

It was very interesting because when we returned to consider the act of the establishment of Rajamangala University of Technology, we found that the main reason was also to open Higher Diploma of Technology. However, the question was why Chairman of the VEC, Chancellor of KMUTNB, wanted to manage the same course of Higher Diploma of Technology to repeat nine Rajamangala Universities of Technology. However, the educational phenomenon like this showed an effort to preserve benefits of many involved sectors. The details would be discussed further.

Although there is the continuation of policy, it is not always brought to practical action by the policy makers as in the policy of small school dissolution in the government of Abhisit Vejjajiva. The cabinet has agreed to the education reform proposal in the second decade (2009-2018) of the Ministry of Education on August

18, 2009. There is one important issue; the determination of strategies in financial reform for education. Then the resolution of strategies in financial reform for basic education on March 22, 2011 has been agreed. The strategies are as follows: 1) Strategy of finance 2) Strategy of administration and resources for education 3) Strategy of mobilizing resources for education and promote participation 4) Strategy of strength promotion. Strategy 2 has main points as follows: 1) Plan dissolution and aggregation or cluster in each education area by Education Mapping, and manage finance and personnel to support dissolution and aggregation or cluster 2) Allocate additional subsidy for infrastructure development, quality development, education in dissolved and aggregated schools/education area and travelling vehicles for dissolved and aggregated schools. Therefore, students will not be in troubles. 7,000 small schools under the OBEC are the target group of dissolution and aggregation. (Chinnawon Boonyakiat Minister of Education at that time gave an personal communication December 9, 2015) that,

> The purposes of dissolution and aggregation of schools are for an appropriate number of schools, more allocation budget for each school, and additional budget for schools with shortage of money to minimize the difference in quality and standard. Schools without students (they travel to study downtown) or having few students are the target group of dissolution and aggregation. Besides, the subcommittee proposes to adjust a new allocation of budget which is the allocation through students and Block Grant to schools. It also proposes the schools to be corporation for convenience in administration of the budget" (Kom Chad Luek, 2010).

Although the financial reform for education is well studied by Education Council Subcommittee at Resources and Finance for Education and Surapon NitiKraipoj is the President, the policy has been protested and opposed widely from the teacher group, local governments and parents in the community including Optional Education Council. The opposition will claim for parents' expenses, relationship and identity of the community including the provisions of constitution about the equality of chance in education etc. Every time when this policy has been

brought to the education reform by Minister of Education, there will be a protest. Moreover, parents and teachers arrange a walking campaign to the Ministry of Education for a protest. Finally the OBEC has to halt the project. The examples of protests are the protest on June 16, 2011 in the period of Worawat Ueapinyakun, the protest on July 4, 2012 in the time of Suchart Thadadhamrongwet and finally the protest in 2013 in the time of Pongthep Thepkanjana. In the time of Pongthep Thepkanjana, he has policy for Educational Service Area to dissolve and aggregate small schools that have the number of students fewer than 120 students for 17,000 schools from total of 30,000 schools. The reasons are for students to study in quality schools which will be beneficial to them and the education management in the overview. In addition, the government has no workforce and budget to develop every school and cannot use the budget from the tax to take care of every school equally like in the developed country. The government also believes that the dissolution and aggregation of small schools will not be affected to students because the OBEC has managed the transportation for the students. It has prepared budget to buy 1,000 vans, the fee will be 10-15 Baht a person and instead in some areas the government will let the private sector bid to manage. In some places not faraway, the government will provide budget for buying bicycles for children (Isra News, 2013). The measures are what the opposition thinks is a gap for a corruption.

From the above it reflects the problem of top-down approach and implementation of policy without making the interested person to understand, especially the educational service area office and the local governments. However, the locals do not participate in the policy, so it causes arguments all along because the logic reasons behind the policy are appropriate. Besides, the policy has supported measures.

Moreover, from the study of Nattakun Runpab (2014), he found conclusions that confirm the reasons and necessaries of small school dissolution. People who have positive impact are directors and teachers. Before the schools were dissolved, the directors of school have to take on the administration of school and teach students at the same time because there are not enough teachers in each class. The schools have little allocation of budget, so it is not enough for the administration of schools. The original affiliation does not allocate teachers because of the decrease of students.

After the schools are dissolved, the directors are moving to administer in the new schools that have more students, enough teachers and preparedness of budget and equipment. In the meantime teachers have to be responsible for many classes, so they cannot do it with their best. Some schools do not have directors, so teachers have to be the directors at the same time. Therefore, the personnel are pleased with the transfer to bigger new schools. People who have negative impact after school dissolution are students, parents, school board, contract teachers and market women because their children have to study far away from home and the school which is one of the three main institutes (home, temple and school) is missing from their community (Nattakun Runpab, 2014, pp. 304-305)

On the other hand, the director of private vocational institutes gave his different opinions,

> One nature of government agencies is that they do not want to decrease the schools because school dissolution means director dissolution and affects the decrease in budget. It is a fundamental problem. However, when the birth rate decreases, the number of students decreases too. Right now people are getting rich. Parents can afford to send their children to study in famous schools in downtown. Besides, the villagers do not want small schools to be dissolved because they think they are the landmark of village. When the villagers do not accept, the politicians are with them because the politicians do not want to lose the basement votes. These small schools cannot build the quality but if we close them, we will get an objection. Those objectors do not send their children to those small schools but they want the government to preserve the schools. I do not know the reasons behind this but I think we should dissolve small schools and left only primary schools because of the decrease in population structure. The philosophy of open school open chance is gone. The number of schools is more than the number of students. In the meantime, the schools in the radius not over 10 kilometers and the number of students not over 120 should be aggregated. It can solve the problem of shortage of teachers and 100,000 retirements in five years. (Anupong Makaranon, personal communication, July 17, 2015)

Aside from the problem of policy continuation and policy implementation, Yingluck Chinnawatra's government was overlapping with the policy. In the general election campaign in 2011, Puethai Party raised one of the main policies "Raise bachelor's degree salary to 15,000 Baht a month and the minimum wage is 300 Baht." When the party got the victory with the highest votes in the parliament, Yingluck Chinnawatra's government announced it to be the policy as she had campaigned. When considering from social policy and quality of life at article 4.1.4, we found that the government had set,

> The government will provide the management of university education and vocational education to comply with labor market both quality and quantity by building experience while studying appropriately. It will support to earn an income while studying and support graduates to have job immediately after graduating by cooperation between workplaces and schools. Moreover, the government will provide the vocational training center (operated by vocational institutes and professional experts) for students, university students and people to get experience before they go to work. The government will also manage to have the repairing center for community to train craftsman and build skills in servicing people. However, the government will work with the private sector seriously to promote vocational education to be accepted and students can earn a high income as the country is developing." (Policy Statement of the cabinet, Yingluck Chinnawatra's government to the Parliament, personal communication, 2010)

From the strategy plan both in the Eleventh National Economic and Social Development Plan Model Scheme of Industrial Development in five years (2010-2013) and a long-term framework for higher education for 15 years No. 2 (2008-2022) including the strategy of production target and workforce development of the country in education reform in two decades 2009-2018. The target determinations in 2018 (Office of the Education Council, 2011a, pp 10-11) are as follows:

1) Having Thai Qualifications Framework and production system development and workforce development by Thai Qualifications Framework

2) Establishing Thailand Professional Qualification Institute Public for approving knowledge capacity and working ability by professional qualification

3) Expanding more of the dual system education, co-operative education and training, the proportion of dual system and co-operative is 30% of vocational and university students.

4) The proportion of vocational students is increasing. The proportion between vocational students: general education in senior high school students is 60: 40.

5) Workforce from high school level up is increasing to 65% and professional standard capacity

However, the policy of "Raise bachelor's degree salary to 15,000 Baht a month and the minimum wage is 300 Baht" obviously conflicts with the strategy of long-term development of the country. The main economy and finance agencies both in public and private sector are concerned and they think that this policy has bad effect than good effect. They agree that this policy will ruin the economic structure of overall country because the entrepreneur will have to take on the increase of production cost inevitably. In addition, it will ruin moderate industries and SMEs which have the highest entrepreneurs of the country. Therefore, the employers have to hire more alien labor. It also reduces the competency in export competition. Moreover, the single minimum wage all over the country will make the industries concentrate only in the big city especially in Bangkok and Metropolitan and it will lead to a long-term problem of the overall economy structure such as the Office of the National Economics and Social Development Board, Bank of Thailand, The federation of Thai Industries, the Office of Small and Medium Enterprises Promotion, The Thai Chamber of Commerce and the Board of Trade of Thailand (Thailand Development Research Institute, 2014, pp. 5-6).

However, both The Thai Chamber of Commerce and the Board of Trade of Thailand are worried about the impact of minimum wage. So, they predict a short-term impact to SMEs which is the majority business of country that more than 90% of the entrepreneurs cannot bear the increase of production cost. In the long term, the raising of wage will make our wage higher than the neighboring countries. Therefore, Thailand will lose capability to induce investment from foreign countries. A higher production cost will make a higher price in the world market and it will cause a

negative result with capability in competition in the world market for Thailand. Therefore, the entrepreneurs may have to close their business or move their manufacturing base to the neighboring countries which have lower wage (TDRI, 2014, pp. 5-6).

The policy had built a large conflict in the private sector and it was one of the reasons lifted to withdraw the Chairman of the Board of Trade of Thailand. From the policy of 300 Baht minimum wage which would be enforced all over the country on January 1, 2013, it caused the Board of Trade of Thailand to divide into two sides. One side was the group to support Payoongsak Chatsitthipon, Chairman of the Board of Trade of Thailand. The group said that the government had to finally follow the policy, so instead they would ask for remedial measures from the government more than ask for the government to postpone the policy of 300 Baht. On the other hand, the opposition claimed that they were not satisfied that Chairman of the Board of Trade of Thailand did not discuss with the government to postpone the time to raise the wage to three years for SMEs to prepare themselves to handle with a high production cost. They were also dissatisfied with the cancelling and the postponing of the meeting of the Board of Trade of Thailand indefinitely. Therefore, they turned to support Santi Wilassakdanon, two-timed Former Chairman of the Board of Trade of Thailand, to be back in the position again (Kom Chad Leuk, 2012a) From the actions of Payoongsak, the opposition saw that he tended to a political side more than the benefit of the members of the Board. Finally, with the power of Minister of Industry (Board of Trade of Thailand Act B.E. 2530 (1987)), he was full term in the position.

While a practical agency like Department of Skill Development talked about the policy interestingly that,

> The policy of 300 Baht wage all over the country does not comply with the reality because each area is different. It does not answer the question because it does not cause the motivation for labors to develop their own skills, especially in low skilled labors. In practical, we already have labor standards and wage standards. Besides, skilled labors do not want to work here. They try to find the way to get more pay. However, the employers with capability will try to increase productivity." (Singhadej Chooumnaj, personal communication, July 22, 2015)

In the education term, the Education Commission Senate gives his opinions that “From the announcement of the policy of public administration, especially in education, in the overview it is impossible. The policy in the overview lacks the clearness in the process and the right practice. Moreover, it does not link with the economy development, the government system and the society. In the subject of the minimum wage, it may cause the risk to be unemployed. The bachelor’s degree will get a salary of 15,000 Baht, so it will make the youth turn to bachelor’s degree more than vocational education despite that vocational education is the important mechanism to enter the production of the industrial sector. Therefore, it will make long-term shortage of labor in the future. The project One Tablet PC per Child takes a high budget both in purchasing and the maintenance. Loan Fund for university students, teachers or the project of national books, it lacks the clearness that the project will be arranged to be the library or the project will loan the books for free etc.” (Office of the National Education Commission, 2011)

The policy is repeating the problem of the proportion of vocational students to general education. As I said before that one of the main causes for students not to further study in vocational education because of the bachelor’s degree value. Parents want their children to have a comfortable work, not a difficult one. As Chaiyapreuk Serirak, the Secretary-General of the VEC, talked about the problem why students do not want to study in the vocational education that,

> The society has the picture in its mind that vocational students are not smart kids. When they graduate, they will get low income. They will have to work hard and they will only be the employees. No advancement for them. However, if students finish bachelor’s degree, they will get a high salary, comfortable work and get a chance to advancement in their career. So, parents promote their children to study more in general education. This is a part of degree craziness in accordance with the value of comfortable work, no hard working, especially in 3D which is Dangerous, Difficulty and Dirty. When considering about the income after they graduate, nowadays vocational graduates have income about 9,000-9,500 Baht. Diploma graduates have income about 10,000-10,500 Baht but bachelor’s degree graduates have

income about 13,000-16,000 Baht. They are totally different. (Chaiyapreuk Serirak, personal communication, August 20, 2015).

From the style of working, the value and the acceptance of society including a clearly different compensation for students with vocational certificate and vocational diploma compared with those who with a bachelor's degree as well as a bachelor's degree salary of 15,000 Baht in a government policy, it would be difficult to create new values of having a job not having a graduation certificate. So, the development of industrial technicians in Thailand will have to build a channel of partnership with the private sector sustainably and systematically especially on the issue of labor standards and compensation system.

6.2 Problems Integrating the Work in Industrial Production

In this section, we will discuss the relationship among the Ministry of Education, the Ministry of Labor and the Ministry of Science and Technology including partnership between the public and private sectors in the production and development of industrial labor especially in Public-Private Joint Venture from national to provincial. Nonetheless, before we discuss these issues in detail, first the researcher will discuss the issue of structural problems within the Ministry of Education to understand thoroughly about the industrial technician production in Thailand.

For the administration structure of the Ministry of Education, we find it somewhat lacking unity and each person is working on his own. This can be seen clearly from the problem of chronic conditions for ten years. The competing efforts to increase the proportion of students who are tied to the amount of per head subsidies 1. Between the Office of the Basic Education Commission (OBEC) with the VEC. In spite of the government's policy to increase the proportion of general per vocational students to 50:50. As education reform in the second decade of 2009-2018 was set to increase the proportion of general per vocational students to 40:60. Meanwhile, the policies of both agencies also reflect an effort to protect the interests of directors and teachers in the schools as well.

As can be seen from the opinion of the director of the Private Vocational Institute in Chiang Mai, he said,

> Many high schools do not want us to go to their school for guidelines because they fear of losing the opportunity to be allocated. If their students move out to vocational, it will make their number of students decrease and headcount subsidy will also be reduced. It also affects the academic standing of teacher and the position of Director of the school. Some schools have to give in for their director's requests for guiding their children to study with them. Sometimes they request for a computer or other devices. However, recently they said that they cannot provide the children anymore because they want to expand opportunities for children within their schools. (Marut Sirithorn, personal communication, July 5, 2015).

In accordance with the opinion of the director of the private vocational institute in Khon Kaen, he said.

> Small school directors in small districts are trying to keep children who finished M.3 and they do not issue the qualification until the opening of the semester. So, the student has no evidence to enroll elsewhere whether general or vocational. The teacher is trying to block his children to know about career path" (Anupong Makaranond, personal communication, July 17, 2015).

At this point, it underscores the seriousness of the conflict between the OBEC and the VEC in the view of Sompong Jitradab that the researchers had discussed in the chapter, he said, "It is a serious problem. However, little is mentioned."

More importantly, although the two agencies that are the pillars of the Ministry of Education do not follow the policy of the government to solve the shortage of labor and increase the proportion of vocational students per general, there is no agency has regulatory authority in accordance with the policy of the department. Because the administrative structure of the Ministry of Education is divided into five major organizations which are the Office of the Permanent Secretary the Ministry of

Education, the Office of The Basic Education Commission, the Office of The Vocational Education Commission, the Office of The Higher Education Commission and the Office of the Education Council. This organizational structure is resulting from the restructuring of the Ministry of Education by the Act of regulations of the Ministry of Education 2003 in the government of Thaksin Shinawatra. The result of such restructuring lacks of unity in the part of officials. Permanent Secretary of the Ministry of Education is only part of the administration. This is different from other ministries which are administered by civil servants (Manager Online, 2013). Other ministries have a permanent secretary alone to command up. In the case of the Ministry of Education, however, there are five major organizations.

Because each organization is reporting directly to the minister who may not have thoroughly checked the operation and the result is unity and consistency lacking in terms of merging practices as mentioned above.

> The policy 30:70, 60:40, 50:50 or 54:45 is still unfinished. Never happen before that the government refuses to talk. They managed only agencies themselves by ignoring the country's future, children will have a job or not. The governance policy is not sustainable. It is forced to follow policy of the government, so it lacks the political continuity. Therefore, government officials are obstinately refused to comply. (Sompong Jitpradab, personal communication, May 13, 2015)

Meanwhile, political parties did not use the authority to order the officials to implement the policies that are in the days of Chaturon Chaisang. There has been a policy hearing as well as suggestions to the Executive Office of Vocational Education Commission to define the framework for operating in the production and development of capacity in vocational education both quantity and quality to meet the needs of establishment. It can support a large investment in infrastructure of public sector and determine proactive policy to prepare for free flow of labor within the terms of the 10 ASEAN countries which aims to increase the proportion of vocational students per general education to 50: 50. In practice, nevertheless, such a policy is not to pay attention and be implemented seriously over a period of nearly one year, Chaturon

held the position of Minister of Education in this regard, Sompong Jitpradab described as.

> The government must decide that if it does not meet the target, high agencies have to be responsible. It must be brave to decide to change person in charge and it must not considerate officials too much. The world focuses on vocational training, dual system and moderate labor but we believe the value of bachelor's degree. Therefore, they need to prepare for the unemployed. It is a simple problem that Education Department in our country cannot figure it out. (Sompong Jitpradab, personal communication, May 13, 2015)

Meanwhile, considering the implementation of government policy of General Prayut Chan-o-cha, it seems that the above will not be much different from the fact. The government General Prayut Chan-o-cha announced the policy, "Education Reform for the Future of Thailand, sustainable, stable, and prosperous." and focuses on the production and development of workforce to support national development and emphasizes the importance of study to have more job. It also pays attention to the reform of higher education with production planning and workforce development according to labor market demands in each year. (Office of the Education Council, 2015)

> It focuses on building the skills to be able to work and creates jobs and income. It induces more people to enter the vocational education. It also adjusts the image of vocational education to be recognized and supports the entrepreneurs to make a contract to cooperate in the dual system. It allows students to earn money and gain experience from working while the entrepreneurs will get workforce when students graduate. This also reduces an unemployment rate in the country. The reform of university education in the field of workforce production will lead to the clear quality of people. The university both in and out of the system should plan to produce workforce in each year by labor market demands and volume. Each university should have identity or specific academic and professional strength.

Two Ministers of Education in General Prayut Chan-o-cha's government, Admiral Narong Pipatnasai (30 August 2014-18 August 2015) and General Daopong Rattanasuwan (20 August 2015-6 December 2016), have proactive role and attitude toward the development of human resources. They have made a policy of vocational education reform both quantitative and qualitative particularly in the cooperation between public and private sector in the dual system. They are the President of the meeting of The Joint Public Private Sectors Consultative Committee for Development Vocational Training. They approve a budget to the VEC and solve the problem of shortage of teachers which has been a chronic problem for a long time by approving teacher assistants. From all of the above, the policy implementation has been strongly responded by both the OBEC and the VEC despite before that they tried to steal students from each other for headcount subsidy for many years. Therefore, many governments cannot achieve the target of increasing the proportion of students. As it can be seen from the collaboration between the OBEC and the VEC, they make "Dual System Project" by opening vocational in high schools called "Vocational Senior High School". They remake the old project undertaken in the second National Economic and Social Development Plan (1967-1971) and give it a new name "Mix Senior High School" for preparing future careers. There are two forms of education which is education in a large public schools studying until M.5 and education in small public schools in the district studying until M.3. The curriculum emphasizes on performing arts in agricultural field (Anuchai Ramwarangkul, 2015, pp. 134-135). However, in this Dual System Project, students will receive both high school and vocational certificate. The Secretary General of the VEC discussed the project.

> There are two forms of vocational high school curriculum First form is called credit collecting which starts at junior high school level. It is a short term of vocational education. Students are collecting their credits on and on. When their credits are enough, they can be transferred to vocational graduate. Second form is Full Form of Dual System. It is starting at senior high school. It is the study of general section and full vocational education at the same time by changing all selective subjects to vocational subjects. When students finish three years of the curriculum, they will receive two certificates both general

> and vocational. The objectives are 1) To provide students with knowledge of General coupled with Vocational. When they graduate, they can work immediately. 2) Lower values towards a bachelor's degree, so it will enable students to know what subject they like and what skill. Therefore, students will know themselves better and do not follow the mainstream society." (Chaiyapruek Serirak, personal communication, August 20, 2015)

Besides, the VEC cooperated with the Office of the Non-Formal and Informal Education (NFE) to make a course of Vocational Certificate Major in Commerce. In this story, Secretary General of the VEC said that now to increase the proportion of vocational students, one way is to let NFE to open Vocational Certificate in the majors that do not require a lot of tools. The quality control is up to the agency. The society has to help and gives feedback. (Chaiyapruek Serirak, personal communication, August 20, 2015) This reflects hurry in the policy implementation to increase the "Volume" to vocational education.

However Anupong Makaranon discussed to problems of vocational certificate administration of NFE. Now, NFE can open vocational education, so it hires contract teachers and pays them by headcount. If there is no student, it cannot hire the teacher. Therefore, NFE makes a contract with the schools, so they can send it students. Therefore, it causes the problem of overlapping disbursement, the problem of ghost children. The system cannot check how many of them because it has to check from the thirteen digits in ID.'

Director of Automotive Industry Technical College Ayudhya said,

> The policy to open vocational education in senior high school works because every sector gets the benefits. The OBEC is still getting headcount budget. The VEC gets more budgets by teaching hour. Nevertheless, the problem is on the children. They have to study more. I am not sure this will be an endless problem. Do the children receive too much education? Will they lack social skills of living? Because they have to study and study, they cannot find their time to discover themselves which may be their problem in the future. Do not forget that in a real life, there are more than in the books. Besides, Non-

> Formal Education to teach vocational education, I do not think it is appropriate. It is only responding to the need of the teachers. It will only make non-formal teachers get their academic standing. Indeed, they do not have knowledge in technology and they lack teaching equipment. When students finish their course, they are not going to perform the work well and it is going to repeat the quality of education. Besides, when schools produce a lot of vocational students and everyone gets his certificate, the establishment does not want to hire them. (Montree Hareunsong, personal communication, August 27, 2015)

The director of Sattahip Technical College Chonburi gives his comments about the policy which reflects Thai education management in the whole system.

> This is another unclear problem of our education. Why the university opens pre-engineering course. It is not its duty. Besides, the OBEC will open vocational education. I think it does not make sense. How can it make sense when students get two certificates when they finish M.6? If the OBEC insists to teach vocational education, will it be as good as vocational schools? Or will students get the quality? This is nonsense because Thai education plan isn't clear. It depends on the politicians in each government. When they ask for something, the government always approves. In other countries they make every step clearly." (Wacharin Siripanich, personal communication, February 13, 2015)

At this point we can see that the success of policy depends on the clear command and unity of command which will affect the enthusiasm of agencies to defend organization's interests. Besides, the structural problem of administration of the Ministry of Education makes the submission and supervision of policy unclear. It affects unity of control and punishment which are direct to the politicians that come to administer from time to time. Now (September 18, 2016) the government is preparing for the education reform policy by emphasizing on rearranging the structure of the Ministry of Education, but there has been no conclusion yet.

However, in the part of the vocational education structure, it has just been changed at the beginning of the year. Previously in 2016 the structure consisted of the Office of the Permanent Secretary (OPEC), the OBEC (in the Educational Service Area Office which has duty to supervise private vocational education in the provinces) and the VEC. However, now all the supervision of the private vocational education is transferred under the VEC by the command of NCPO 8/2015 on February 8, 2015 by the request of the Association of Private Technological and Vocational Education Colleges of Thailand. Therefore, the vocational education management is all under the VEC and it may be the way to help producing industrial technicians systemically.

6.2.1 The Problem of Work Integration in the Government Agencies

For the relationship between government agencies in producing industrial technicians, the Ministry of Education is the main, the Ministry of Labor and Social Welfare supervises labor standard and training, and the Ministry of Science and Technology. In the policy all of the agencies above have loose cooperation in the Memorandum of Understand: MOU. The Department of Skill Development (the Ministry of Labor and Social Welfare) is the main. In practical each agency has its own authority framework, so they do not care for each other and they work on their own. However, aside from the VEC, Department of Skill Development has just participated in the cooperation after 2014. The details will be discussed further as follows:

However, the obvious and concrete cooperation between the government agencies in producing industrial technicians is probably the cooperation in producing industrial technicians at science and technology between the VEC and the Ministry of Science and Technology and network universities in each region in “Science-Based Technology Project”. It is approved by the cabinet on December 18, 2007. This is a pilot project in Science-Based Technology Vocational College (Chonburi) (previously Panthong Industrial and Community College) under the VEC for vocational education certificate in 2008. It develops and expands further in four campuses in regions by the model scheme in five years (2010-2014) of the VEC such as 1) Suranaree Technical College arranges industry subject in science based technology field. The nursing

university is Suranaree University of Technology. 2) Lamphun College of Agriculture and Technology arranges agriculture subject in agricultural biotechnology. The nursing university is Rajamangala University of Technology Lanna. Maejo University and ChaingMai University are supporters. 3) Singburi Vocational College arranges home economics in food technology. The nursing university is Rajamangala University of Technology Thanyaburi. King Mongkut's Institute of Technology Ladkrabang and KMUTNB are supports. 4) Phang-nga Technical College arranges commerce and tourism industry subject in tourism technology. The nursing university is Prince of Songkla University. Walailak University and Rajamangala University of Technology Srivijaya are supporters.

However, these colleges have preparedness in various needs such as the academic strength, the potential of director and teacher, the connection between production and service sector, the location near industrial estate, the versatility in area management, the readiness in infrastructure and the nursing universities to support at academics. However, from the research of the assessment of Science-Based Technology Project" (phase 1), there are details of all the budget in the Science-Based Technology Project in five colleges for totally 401,348,600 Baht divided into 283,454,400 Baht in investment budget and 117,894,200 Baht in processing budget (Anuchai Ramwarangkun, 2015, pp. 282-283). The budget is rather high compared to general vocational education. Nevertheless, it is necessary in Research and Development; R&D which will be an important base for Knowledge intensive industry to bring high production and service capacity to compete efficiently

All five colleges will arrange Project Based Learning with the integration of science and technology knowledge and professional skills, so students will have ability in invention and creation of technology. Besides, the experts from industrial sector and the university lecturers are provided to assist teaching and give advice for making familiarity with the problem and the real problem in industry. There are teacher trainers provided to take care of academics, project and lives of the boarder in the project closely (Matichon Newspaper, personal communication, January 3, 2012). Therefore, when students in the project finish the course, they will have skills in general subjects such as Mathematics, Physics, Chemistry and Biology. The subjects are provided the university lecturers to teach, for example, Mathematics and Physics

there are lecturers from Chulalongkorn University, Biology from Suranaree University of Technology, and Chemistry from King Mongkut's University of Technology Thonburi while other subjects the teachers in the college will take care for them and students will receive intense practice. Therefore, students in this project will have enough basic skill to further study in the university. However, students in the project will receive support in expenses all through the course (3 years). Students are responsible only their personal expenses and they still have a chance to further study in the four universities of technology in the project which are King Mongkut's University of Technology Thonburi, Suranaree Univarsity of Technology, Rajamangala University of Technology Thanyaburi and King Mongkut's Institute of Technology Ladkrabang (Science-Based Technology Vocational College (Chonburi), 2015).

The criteria to select the students for the project, Chaiyapreuk Serirak Secretary-General of Vocational Education Commission said that I would begin selecting from M.3 students further studying in vocational education by looking at their grade. The minimum grade will be 2.5 up and there will be a measure in creative thinking. We may arrange camping to select students with capability or students with interest in invention of technology. Each year we will set the target to receive 30 capable and talented children. They have to take a writing exam, interview and show their talents in invention. Now the Science Based Technology School is expanding classes and opening diploma curriculum. In the future, the VEC has policy to extend the curriculum of science based all over the country in the institutes that already have had the curriculum (Chaiyapreuk Serirak, personal communication, August 20, 2015)

Aside from opening the course in science and technology in vocational education certificate, some Rajamangala Universities of Technology are also opening vocational education certificate for feeding the students in its own bachelor's degree curriculum. As in the case of Thai-German Pre-Engineering School KMUTNB since 2003, Metha Tassakorn the first Thai-German Pre-Engineering KMUTNB student talked about the course in this school, "The pre-engineering school of KMUTNB when you graduate, you will get two certificates which are M.6 and vocational education certificate. The university guarantees the certificate itself not the VEC. In the past there was no problem because when students finish, they further study and

they are not using the certificate to apply for a job. It is a vocational education certificate curriculum that teaches science-math and also vocational study at the same time. Every term the major subjects are Maths, Physics, Chemistry and English, technical theory subject and technical practice subject. So, students can further study in every filed because the curriculum is equivalent to science-math. On the other hand, general vocational certificate will teach a little of Maths and there are no physics and chemistry but instead it teaches only science. So, students do not have enough basic knowledge to further study in engineering in the university of the OHEC." (Metha Tassakorn, personal communication, August 16, 2015). Students graduating with GPA 3.25 up can further study in Faculty of Engineering. However, students with GPA 2.00 can study in Faculty of Industrial Technology without taking the test. Therefore, it can be concluded that every student who studies in this curriculum can automatically study in bachelor's degree at this institute.

When the Rajamangala group demands for an amendment of Rajamangala Institute act for drafting to Rajamangala University of Technology act by gathering the campuses and establish to nine Rajamangala Universities of Technology. The purpose of the establishment of nine Rajamangala Universities of Technology to be the university of science and technology are they can arrange academic education and higher education emphasizing on practical in bachelor's degree, Master's degree and Doctor's degree to mainly support the further study of the graduates from vocational education institutes (Anuchai Ramwarangkun, 2015, p. 149). However, in practical the study is going back to the same engineering in the university. However, Sompong Jitpradap Advisor to the Minister of Education (at that time is Jaturon Chaisaeng) talked about the meeting with the Rajamangala group for establishing the university,

> I tell them that if you want to be the university, you have to commit that you will never leave vocational and diploma certificate. Nonetheless, they will do an admission like a general university. They will admit M.6 and finally they actually do it. They left a little part for vocational and diploma which is really little and finally they left them all. Rajamangalas think that when they are with the vocational, it is shoddy. They can't find the advancement. Now they've been living with the university and they try to be university. Nevertheless, I

> think they are in Category 2 because they are vocational education. I think in this part Rajamangalas have made a big mistake. At that time I tell Mr.Jaturon that everyone wants to push them to the university, but I insist Mr.Jaturon that if they want to leave, they have to commit that they will receive only vocational and diploma students. They commit to do it but when they are out, they are not admitting those vocational and diploma students at all. When Mr.Jaturon comes to take the position for the second time and the vocational school wants to open bachelor's degree. He stops them." (Sompong Jitpradap, personal communication, May 13, 2015)

Then the OHEC issues the regulations that the universities under the OHEC are not allowed to make the continuous curriculum for diploma students to further study since 2010. It wants to support diploma students to further study in vocational institutes that are in the process of establishing by Vocational Education Act 2008 (Teerawuth Boonyasopon, personal communication, December 12 2014). However, the different management of education directly affects the production of "vocational teachers". From the interview of Director of Ban Khai Technical College who use "vocational teachers", he said

> In the past we had Rajamangala to produce vocational teachers. The institute for producing the vocational teachers specially is Rajamangala Institute of Tech. Thewet Campus. In the past it was called Technological Vocational College. Later it becomes a university and it does not teach the vocational teachers subject any more. Instead other universities come to produce the vocational teachers. In the past the vocational teachers had to graduate vocational and diploma certificate and further studying in Teacher Profession called bachelor of Science in Industrial Education. It made the vocational teachers in the past have skills to teach the students in a real practice. However, nowadays the vocational teachers can teach only in the theory because they never practice and they come from M.6 which also causes a lot of problems. (Kamon Chumjareon, personal communication, February 6, 2015)

Meanwhile it affects the engineering of Rajamangala Universities of Technology which make the intensity of the teaching in practical decreases inevitably. As in the voice of the labor in this group “3 institutes of King Mongkut’s Institute of Technology teach semi-practical. Rajamangala’s teaching is less than this and it is less in practical. They are all the same now.” (Interview, Pairat Peundoung August 27, 2015). Later students who have passed the test to enter these universities mainly are high school students. After that it tries to open more vocational education certificate in these universities and these university also want the VEC to approve the certificate. Metha Tassakorn talks about the study of the pre-engineering school of KMUTNB Sakonnakorn campus (2008) that

> The university here also wants students to have vocational certificate of the VEC, so it has to improve the curriculum. Therefore, students have to study more practice because regular curriculum of pre-engineering will study more theory than general vocational schools. Students study theory for three days and practice for two days but for the VEC students, they have to study theory for two days and practice for three days. However, we provide students to train additional training after the semester for two months (Metha Tassakorn, personal communication, August 16, 2016).

Now Pre-Engineering and Technology Demonstration School Rajamangala University of Technology Isan Sakonnakorn Campus has been approved the certificate from the VEC. Besides, students who finish Triam Udom Suksa Teachnology School Rajamangala University of Technology Lanna (2007) can further study in bachelor’s degree without taking the test. At this point it reflects the overlapping of vocational education that lacks the integration and does not answer the question of labor market demands that obviously need skilled industrial technicians.

The cooperation to directly produce industrial technicians is the cooperation between Department of Skill Development and the VEC. If we go back to consider the cooperation signature between Department of Skill Development and government agencies between 1995-2011, we find that there is one multilateral cooperation between Department of Skill Development and the VEC which is the cooperation

between Department of Skill Development and The Federation of Thai Industries VEC (Dr. Sasitara Pichaichannarong Secretary-General at that time --- researcher), The Association of Private Vocational Education Schools of Thailand, Thai-German Institute and Technology Promotion Association (Thailand-Japan). The purposes are to cooperate, connect and integrate in developing human resources in industry from the center and the region, promote strength of labor, coordinate labor demands, promote medium industry and SMEs in the region to have strength and comply with the demands of the area with effect from January 24, 2011-December 31, 2016 by managing the competition in creating technology and invention for urging and inducing vocational students to develop more knowledge and skill. The pilot areas are in seven provinces such as Ratchaburi, Kanchanaburi, NakonPrathom, Samutsakorn, Samutsongkram, Prajoubkirikhan and Petchaburi but it is a deal that does not have a clear plan and the result of the plan does not exist.

Then we found that there was memorandum between Department of Skill Development and the VEC on September 4, 2014 after Prime minister General Prayuth Chan-ocha had announced the policy of production and workforce development to support the development of the country. In the principles and reasons, it claimed,

> Vocational education management and training are education management in vocation that complies with the National Economic and Social Development Plan and National Education Plan to produce and develop workforce at skill level, technical level and technology level including improve the vocational education to be higher and comply to meet labor market demands. The strategy of skill development and national professional training coordination determined by National Vocational Training Coordination and Labour Development Committee is emphasizing on the connection between the developments of human resources in education and working to support the system of the complete development of human resources. Therefore, Department of Skill Development and the VEC are seeing the importance of the integration of skill development and vocational education and the plan of mutual use of resources to build and lift up human resources to meet production and service sector demands both in quantity and quality.

This memorandum takes three years from October 1, 2014 to September 30, 2017. Although it is only a joint committee to make details with frame of the extent of the target group/target industry and conditions of joint work for making Action Plan. From the interview of Thanit Numnoi Deputy Director of Department of Employment (Now retire), we knew that "Now Department of Skill Development and the VEC are discussing to assemble the missions between them to reduce the overlapping of the work." (Thanit Numnoi, personal communication, August 21, 2015). However, the initiation will be a good start to directly cooperate and lead to the integration of the management of workforce in the country and a concrete success further. Nowadays vocational students have to pass a professional standard of the VEC to get certificate to enter labor market. In some subjects, the Ministry of Labor Legislation determines the students to pass the National Skill Standard Test of Department of Skill Development to get a certificate. Also in the future, students have to enter the assessment from Thailand Professional Qualification Institute (Public Organization) by global standard.

Because of the overlapping of professional standard between the two agencies (professional standard and skill standard), so the VEC is proceeding to make professional standard by the Ministry of Education announcement about National Vocational Education Qualification Standard Framework 2013. The Secretary-General of the VEC said,

The curriculum has the National Qualification Framework controlled and it has been adjusted (2013---extended by the researcher). It emphasizes on more quality assurance. The students have to pass professional standard assessment. This is done because the VEC does it itself and another one is V-net. It is the assessment of the basic knowledge in professional but it is not affecting to the graduation. The part that is not starting is the vocational qualification standard assessment of the professional standard organization. Seven fields have been done already but it is late because the employers have to set and agree that they will pay by skill not by certificate. There are three levels of labor standard test. (Chaiyapreuk Serirak, personal communication, August 20, 2015)

All of these sectors agree that the VEC should bring labor standard of Department of Skill Development to use as framework to assess. As in the opinions of industrial technician, an executive of Honda Thailand said,

> Department of Skill Development has already made the professional qualification standard. Why they do not want to cooperate with the VEC and why they have to do it on their own. In fact, it should be in the same standard. On the other hand, specific skills in each field should have other regulations. Now the Department of Skill Development standard is good and acceptable, but the VEC has to improve itself for a long time to be accepted. The resolution is to set the person to have authority to command to cooperate. (Pairat Peundoung, personal communication, August 27, 2015)

In this subject, Deputy Director of Department of Skill Development admits that "The production of industrial technicians is the subject of the VEC but labor skill development and information storage has to be the subject of the Ministry of Labor. However, now we lack the integration between the training center, the number of labors in the market and the number of labor market demands. Now they are still working on their own. It has to clearly divide the target and the curriculum. However, the subject of

> Vocational Qualification Standard Framework", many sectors are trying to do it on their own. Department of Skill Development has already discussed with the factory in this part. On the other hand, for the ways to integrate work the Ministry of Labor is discussing with the Office of National Education Standards and the VEC that the Office of National Education Standards is moving to the Ministry of Labor and they will cooperate to set the standard regulations and are responsible together. The Office of National Education Standards is responsible for producing vocational and diploma students but Department of Skill Development is responsible for producing and developing labor in the system. (Singhadet Chooamnat, personal communication, July 22, 2015).

In accordance with the vision of Former Deputy Director Department of Employment, he talked about how to manage the skill standard interestingly that

> The VEC should cooperate with Department of Skill Development to search for a precious diamond and open the chance for students to enter the world of academics, so they will receive both education certificate and professional certificate. Department of Skill Development is trying to adjust the law to transfer the Office of National Education Standards (Office of National Education Standards (Public Organization) extended by the researcher) to the Ministry of Labor because Department of Skill Development has the qualified vocational teachers. Although they do not finish bachelor's degree but they are real talented and skilled. (Thanit Numnoi, personal communication, August 21, 2015).

Therefore, if they want to set the standard regulations between the agencies, it should be beneficial to industrial technicians. So, the private sector can admit the compensation system by the professional skills more than the certificate. Although Thailand Professional Qualification Institute (Public Organization) is a national agency, it has just been established in 2011. So, we cannot be sured whether it will get an acceptance from the private sector or not.

> Thailand Professional Qualification Institute (Public Organization) has representatives from many sectors both from public and private sectors. It still emphasizes on the certificate and the determination of the number of hours of the test. It lacks the variety. No one from the practical section participates in determining necessary skills. Students also have to pass the standard test determined by other agencies outside the institute. It will reduce the problem of conflict between parents and schools when children cannot pass the test. On the other hand, the Office of the Civil Service Commission has to work harder in building cooperation between the Association of Professions and The Federation of Thai Industries. Therefore, it will make training and the skill test acceptable. (Thanit Numnoi, personal communication, August 28, 2015).

At the beginning if the agencies can coordinate together to make the professional standard, it will make labors confident which will affect the compensation of industrial technicians. Nowadays the VEC assesses the professional standard by the writing test more than the practical test which does not comply with the study that emphasizes on theory more than practical. It causes working problem because when students finish, they cannot work immediately. So, the entrepreneur has to train them before hiring them. As in the comments of the director of Automotive Industry Technological College, he said,

> The VEC has to arrange students to take the qualification test especially on the capacity. It is not just like it is giving them the test that they are not capable to do it. The VEC has to link it with Department of Skill Development but in practical it may be hard to do because there are headcount interests in the training. Therefore, it will have to find its way to do it, or the factory will complain that your students cannot work. That is because we do not look at ourselves. We blame others for not helping us. The VEC has to talk with Department of Labor because it looks after the labor wage. The VEC has to talk to the Office of the Civil Service Commission because it is relative to the certificate. So, the payment by the professional standard and capacity can happen and the chance for the students to get more pay are also increasing. Therefore, it will cause the motivation for labors to develop their skills in the long term. (Montree Hareunsong, personal communication, August 27, 2015).

Therefore, the cooperation between the two government agencies is essential to the stability of the production and workforce development. However, the management has to be driven in the policy to be effected concretely. In this subject, Wanit Umsri, Deputy Secretary-General of the Education Commission gives his opinions about the ways to solve the problem of the professional standard.

> Prime Minister General Prayut Chan-O-Cha signs the VEC to do the assessment of the students to receive three certificates at once for reducing

> steps and expenses. Every assessment has registering expense while most of the vocational students are not rich. Recently the three sections have set one working committee especially Department of Skill Development (Department of Skill Development---extended by the researcher) and Thailand Professional Qualification Institute (Thailand Professional Qualification Institute---extended by the researcher) based on the professional standard. While the VEC clings on the professional standard, for example, students who graduate construction worker of the VEC, they have to have all the comprehensive knowledge of draftsman, carpenter, mason, painter, welder, electrician and plumber at level 3, 4, 5. While Department of Skill Development and the Office of Civil Protection and Law Aid to the Public determine the specific field such as mason or carpenter and approve only in level 1-2. For Department of Skill Development, it will pilot only in priority field and control field such as electric building. On the other hand, the Office of the Civil Protection and Law Aid to the Public will do only in 13 fields that it has made professional framework and has already delivered it to the VEC. All of these have to accelerate to finish in 2016. (Khao Sod, 2015)

The process will be concrete or not, it has to be proved further. However, it depends on the continuation of the policy. At least the ways to build the standard of the industrial technicians are a good start for the approval of Thai labor skill standard. Meanwhile, the interview reflects the necessity of the command to implementation as well as cooperation with the Ministry of Industry under the notification on appointment of “Super board of Education” last March 2015. The purpose is to make the education and the development of human resources work together by connecting ministry that arrange education and ministry that involved with workforce to work together. As Kobchai Singsittisawat, Deputy Director of Department of Industry Promotion gives an interview that

> Right now there is appointment of working committee that is integrated from many agencies. The key man is the Ministry of Education, the Ministry of Labor and the Ministry of Industry. We will work with the private sector in

> the integration to know its need. The private sector needs how many persons per year, per month and at what field? Then the Ministry of Education and the Ministry of Labor arrange Supply. the Ministry of Education will adjust the curriculum by demand. It will adapt the curriculum of vocational teachers to meet market demands. It will arrange pre-training. Therefore, the private sector won't have to provide the training for six months as now. (Kobchai Singsittisawat, personal communication, August 18, 2015).

From the above, the cooperation within the Ministry of Education itself in producing industrial technicians and the cooperation between the government agencies have to have clear mandate and supervision including a close monitoring and assessing to reduce the limit of the law in implementation. Thanit Numnoi talked about the problem between the government agencies and the private sector in producing and developing industrial technicians that

> There has already been the cooperation between the government and the private sector. Importantly the government agencies do not fight among themselves. They must not make an excuse that because it is against the law. However, when they are using the law for themselves they say they can, but when there is no law approved, they say they cannot. The government has to have a more open-minded in the integration of work with the private sector. For example in Public and Private Joint Committee for Economic Resolution, the government has to tell what the private sector needs or lacks. The government has to provide the number of the students who are going to graduate and what field they are going to graduate. If the private sector lacks, the government fill and if the private sector is full, the government bring them back to fill the skills. The curriculum can be developed further. Department of Skill Development can also help but now the Ministry of Education isn't adjusting itself. It does not adjust its curriculum to be flexible by labor market demands that want to change the proportion of academics to training from 70:30 to 30:70. (Thanit Numnoi, personal communication, August 21, 2015).

6.2.2 The Problem of the Integration of Working between the Public and Private Sector

The obvious integration of working between the public and private sector nowadays is The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC). Aside from the many first of the co operations, it is the joint committee between public and private sector that has representatives from the important business organizations of the country. The three organizations are The Federation of Thai Industries, The Thai Chamber of Commerce and The Thai Bankers Association. In this part, we will talk about the initiation of the establishment of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC), the development in each period, and the structure of the administration nowadays that has been connected from the center to the regions and provinces. This mechanism of cooperation cannot be separated interestingly. It is almost indistinguishable with the structure of the bureaucratic administration of the country. Besides, we will talk about other co operations that directly affect the production of industrial technicians; The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) for Development of Vocational Workforce and National Vocational Training Coordination and Labour Development.

The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) is derived from an effort to arrange the system and the mechanism of cooperation between public and private sector. The important ways are to support private sector institutes to have more role and participation in the development of the country. However, The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) started in 1981. The government of Prime Minister General Prem Tinnasulanon established “The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)” by the resolution of the cabinet on June 30, 1981. Prime Minister is the president and assigns the Office of the National Economics and Social Development Board to perform the duty as the Secretary. Committees from the government sector consist of economy minister and involved Head of Government. Private committees consist of representatives from the three institutes; The Thai Chamber of Commerce, The federation of Thai Industries and The Thai Bankers Association. However, The Joint

Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)is expected to be the organization that has the duty in advising the policy and the resolutions of the economic problems though it is not the organization having authority to make decision in policy and give direct command. Then this mechanism is expanded to the region which leads to the establishment of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in provinces which are imitated from The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) from the center. The Ministry of Interior is the main agency to cooperate. The provincial governor is the president. He has duty to suggest the policy, ways and measures both in solving the problems and developing economy in the province. (Office of the National Economics and Social Development Board, The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC), The mechanism of driving the development of the country).

The role of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) at the beginning is extremely important to the development of the country because Prime Minister of the country seriously pays attention to. Almost every time he performs as the president of the meeting himself. General Prime Minister Prem said in the first meeting of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)that "The establishment of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) is to repeat the intend of the government to help solving the problem of the private sectors in economy closely. If they have any problems, they can come to discuss the problems together. Besides, the government has policy to develop the private institutes to be the organizations that the government can count on, and they will have to be responsible for the society," The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) (, 1998: page 5). From the intention to help the private sectors from the government reflects the reliability of each other (between government and private sectors). As Anek Laodhammathat talked about the background of the establishment of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC),

> It represents a good relation between public sector and the business sector in building the strategy to develop the country. The mechanism of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) comes from the continuous pressure of the business sector since the government of General Kriangsak Chamanan before beginning the three national associations under the name of The Joint Standing Committee on Commerce, Industry and Banking (JSCCIB). “Prime Minister has to be the President and the meeting has to be arranged always and officially”, the three national associations said (Anek Laothamatas, 1996, p. 53)

At that time with the context of the economy, society and politics both inside and outside of the country, it was necessary for both of them to cooperate closely. The economy and society of the country was changing in the production system, commerce and finance. They were getting more complex. The population was increasing and the resources were decreasing. The regulations, the system and some administrative points of the government weren’t appropriate with the changing of the economic condition. It made the running of the private business not appropriate. The world economy was fluctuating both in commercial and financial crisis which caused the intensive competition. Besides, one of the most important influences was the private sector leader was successful in cooperation with the government of Japan. Paron Issarasena talked about the background of the establishment of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC).

> I admire Mr. Thawon Pornprapa greatly. It has to be written in the history of The Federation of Thai Industries that Mr. Thawon has joined in many Japanese companies. He sees that Japan has developed a lot of industries because the government is cooperating with the private sector. The private institute of Japan called KEIDANREN. KEIDANREN and the government, they work in harmony. Mr. Thawon has come up with the idea of establishing The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC). I have to admire that he is the one who initiates this idea and I continue this idea. Dr. Sanoa Anukun, the Office of the

> National Economics and Social Development Board, also agrees with it. So, we go to discuss with General Prem Tinnasulanon Prime Minister. He agrees with it, so it leads to the establishment o The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)f. Every month there is the meeting between the economic cabinet, The Association of Thai Industries, The Federation of Thai Industries and The Thai Bankers Association. This cooperation between the public and private sectors can solve a lot of problems of the economy. (The Federation of Thai Industries, 2002, pp. 123-124)

This point reflects the vision of the private sector leader like Thawon Pornprapa and the head of the technocrat like Sanoa Unakun He receives the social acceptance in professional and importantly the reliability from Prime Minister. From the interview of General Prem Tinnasulanon in 6-decade anniversary of The Federation of Thai Industries 2010, he said,

> Things that happen when I am Prime Minister; the project of rural development, the development of the Eastern Seaboard, the measures to preserve the stability and the financial stability of the country, it is an important tool to help the government handle many crises and I do not work alone. The persons who do it are the ones who see the benefits of the country. I do not have much knowledge about this but I know who has the knowledge so I ask for the persons who have knowledge to do it. The one who knows is The Federation of Thai Industries and I am lucky that Secretary-General at that time is Dr. Sanoa Unakun. Mr. Sanoa is very smart. He is a very good man and honest and the one who sacrifices himself for the public. Therefore, my government gets a firm base which makes our country strong. About The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC), we have to give goodness to Mr. Sanoa again because Mr. Sanoa is the one who presents me that we should establish The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC). He explains the usefulness of the establishment. I listen to him and I

> think that it is good as he said, so I approve it. Therefore, The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)helps make the good relationship between public and private sectors, and the better is in the past the private sectors did not believe and dare to come to the government including they couldn't rely on the government officers but now they do. Finally The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) has proved that if the public and private sectors cooperate together, the economy of the country will be beneficial. (National Economic and Social Development Board, 2010, pp. 133-134).

In accordance with Anek Laodhammathas, he said,

> General Prem Tinnasulanon Prime Minister and Sanoa Unakun Secretary-General of the Office of the National Economics and Social Development Board do not consider to establish The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) because of the pressure or request from the business sector only. On the other hand, the government sees the benefits that it will get from the business sectors such as they can cooperate together to solve the collapse of the economic problems, build the political stability, improve the efficiency of the government's system and reduce the misappropriate patronage between government and business. (Anek Laothamatas, 1996, p. 203).

Meanwhile Sanoa Unakun talked about the role of The Federation of Thai Industries with the fast growth of the economy at that time

> At that time The Federation of Thai Industries got high reliability from the government leader which was General Prem Tinnasulanon as Prime Minister. He gave The Federation of Thai Industries a big role in advising at the economic and social policy. It scrutinizes policy and considers the important issues that need the maximum decision and coordinate the action plan of involved agencies systematically and completely. The duty of The Federation

> of Thai Industries is to be the secretary of six national committees which beside established by the regulations of the Office of the Prime Minister, Prime Minister is always the president in every committee. The success of the policy decision and a flexible and continuous coordination of the action plan comes from that Prime Minister Prem is always the president in all six committees himself. Therefore, it makes ministers and heads of agencies come to the meeting themselves too. Prime Minister Prem has arbitrariness in mandate. The government of Prime Minister Prem consists of Prem1 to Prem five for nine months consecutively which is a long time to push the policy, plan, and important projects to achieve and have a lot of success." (National Economics and Social Development Board, 2010, p. 146).

From this point it can be said that beside the close cooperation between the public and private sectors in the type of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC), the direct mandate from the leader of the country is also important to implementation successfully. The listening to the technocrats who have knowledge, capability, vision and protection of that technocrat including the continuation of the position of Prime Minister Prem and the position of Secretary of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) of Sanoa Unakun for eight years. The most important factor is the holding of the position of General Prem in the period of half-Democracy, so Prime Minister has the entire and absolute mandate and unity. He does not come from the election so he does not have to be responsible for the parliament. Therefore, to follow the policy by the Fifth National Economic and Social Development Plan (1982-1986) and the sixth National Economic and Social Development Plan (1987-1992) is achieving concretely.

Meanwhile Anek Laodhammathas explains the model of the relationship between the government and Thai business in the time of General Prem Tinnasulanon by comparing the form of Thai development and the new industrial nations in Southeast

> The liberal corporatism-societal of Thailand has the characteristic of “leading by government” which is less than the new industrial countries in East Asia. Thai government has let its business sector to have role in determining the policy. The most important issue is the interference level of the government to the economy in Thailand is lower than that in the new industrial countries in East Asia. As you can see that the Thai government does not control the direction of the development of the industrial sector so much by using the old steps such as persuasion or supply loan with low interest for the commercial banks to allocate to the company or business which is totally different form South Korea. In the case of South Korea, the government will appoint its own official to govern in the commercial banks, so it can be sure that those commercial banks will allocate credit and loan with special interest to important private business. Besides in the case of Thailand, the private company can ask for loan from foreign countries independently while the South Korea government affirms that all kinds of loan request from foreign countries have to be approved or guaranteed by the government. One of the most noticeable things is Thai government often uses the method of building motivation to let the private sectors invest in industry that the government promotes. However, South Korea government forces each private company to follow the government’s suggestions. Sometimes those methods are the method of threatening. Therefore, it leads to the conclusion that the balance of power between government and business association in the new industrial countries in East Asia tend to the government, but in Thailand, the government and the business association have more balance in this equation of power. (Anek Laothamatas, 1996, pp. 223, 225).

The successful achievement of the mechanism of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)due to the close cooperation between government and the private sector which will make the country to develop with the leap, the more direct investment from foreign countries under the context of Half-Democracy politics affect the industrial policy of import substitution. As Paron Issarasena na Ayudhya talked about an important mission of

Public and Private Joint Committee for Economy Resolution that it has changed the government's policy from Import Substitution to Export Oriented.

> At the time the government and the private sector cooperate strongly. They are working with the same goal that is developing the economy of the country for Single Objective. At the beginning we were starting at import substitution. We produce the products that we've imported before to reduce the import. At the time of Prem Tinnasulanin Prime Minister, many foreign companies came to invest, so new industries are emerging a lot by the policy of import reduction for saving the foreign currency. Then when we are proficient, we help each other to develop the existing industry and new industry investments mostly are for export for more foreign currency." (The Federation of Thai Industries, 2002, p. 123).

The roles of the government sector at this time, Anek Laodhammathas compared Thailand to the new industrial countries in East Asia.

> The government has interfered in the management of the economy since 1982 which is the first year under the fifth National Economic and Social Development Plan. The Thai government has adjusted the structure of the industrial fields starting from the electric industry, electronics and the automotive industry. In the middle of 1980, the government had adjusted the mechanism of the capital market and devaluation to accelerate investment and make the import products of Thailand can compete with the global market. The government tries to increase the efficiency of the bureaucracy to upgrade itself to become the economic leader. The most important method is the pressure from the business sector and the push in The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)in each level for the government agencies to solve the lateness of bureaucracy. (Anek Laothamatas, 1996, p. 221).

Although the development of the Thai industry is the same as the development of industry of Japan, Taiwan and South Korea that is the government can set the steps to develop industry from the import substitution to industry for export, from the Labor intensive Industry to Investment Intensive Industry such as changing from the textile industry to electric industry, automotive, steel, shipbuilding, petrochemical and Knowledge Intensive Industry and the important roles of the three governments to promote Research and Development to improve the efficiency and the production technology of the industrial sector, the development of Thai industry is still halting and cannot develop to the steps of Knowledge Intensive Industry because of Research and Development Lacking. The industries have high potential and been supported by the government all along for decades such as the automotive industry. Both the government and the private sector from large automotive production companies from foreign countries all agree to push Thailand to be the center of the automotive production in Asia or Detroit of Asia since the recovery from the economic crisis in 2007. However, the model scheme of Thai automotive was not achieved though it has been improving so much as can be seen in the establishment of specific institutes both in the Ministry of Industry and The Federation of Thai Industries such as the automotive industry and cluster of the automotive industry. Now Detroit in Michigan which is the model and the world center of the automotive production was going bankrupt in 2013.

After General Prem announced to retire from the politics and denied to accept the position of Prime Minister in 1988, Thailand has entered the total democracy which causes the power of the economy to be strong and people have more roles in politics. When the supreme leader can come from parties instead of the old bureaucracy, the powers of the economy that have been the supporters for the parties have turned their needs from The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) to dwell their needs on the parties and the politicians for their own interests. As the supreme leader in politics and the committee are from election (out of the bureaucracy), the roles of the government officials have been decreasing. It also affects the relationship between the government and the private sector because the transition of the state power has changed. The parties get supported from the private sector group and the members having power of economy.

The new state of power has interests connected with the private sector group. The relationship has changed from the authority and the under authority, those who are in the bureaucracy and out of the bureaucracy to the relationship of the cooperatives but have different goals. The supporters expect their business interests and the beneficiary hopes for this political power. (Wisa Poonsirirat, 1990, p. 128). Before the businessman has directly come to take the power in politics in the next decades and the cooperation between the government and the private sector are gradually reducing the importance. They are not cooperating through The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) as in the past.

Although after General Prem Tinnasulanon there is still the mechanism of Public and Private Joint Committee for Economic Resolution, the mechanism is gradually reducing the importance which will be less or more is depending on the economic and social environment and the policy of the government at that time. Prapat Pothiworakun has said in this issue that "Each Prime Minister is different. General Prem pays attention to The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC). General Chatchai pays attention to The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC). However, when Prime Minister Anan comes, he does not call for the meeting because he does not have time and he has been the businessman before. General Chawalit does not call for the meeting at all. When Police Lieutenant Colonel Taksin comes, he dismisses it. He says Thailand shouldn't have The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC). We should arrange the practical meeting for each subject but The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)in the provinces are not dismissed." (The Federation of Thai Industries, 2002, p. 229).

We should pay attention to the comment of "Chatchai also pays attention.". It should be extended because the government pays more attention to The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in provinces. "The government has appointed The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in provinces under the authority of the Ministry of Interior in the government of General Chatchai Chunhawan Prime Minister… As The Joint Public Private Sectors Consultative

Committee for Solving Economic Problems (JPPCC)in provinces is determined to be under the authority of the Ministry of Interior because administration and the development of the area in the provinces all over the country are under the Ministry of Interior. In addition it is a government agency that has high power, especially the provincial governor. He also has duty to take care of government agencies under other ministries. As a result, the The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)is better under the control of the Ministry of Interior than any other ministry." (Prapatchot Ngankham, 1994, p. 42). Meanwhile it is the beginning of binding the mechanism of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) to the structure of public administration.

Meanwhile Anan Panyarachun does not pay his attention to the mechanism of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) at all which may be because before he became Prime Minister, he was in the position of the President of The Federation of Thai Industries. With the condition of the provisional government, so it is owing to unfortunate circumstances to use the mechanism. Many important positions in this cabinet are from independent technocrats from the business sector and banking. Later the mechanism of Public and Private Committee for Economic Resolution is dismissed by Police Lieutenant Colonel Taksin Chinnawatra in 2002 after the change of administration of integration and appointment of "the provincial governor in integration for the development of the province" or known as "the provincial government of CEO" in 2001.

Until Prime Minister Abhisit Vejjajiva (December 17, 2008-August 5, 2011) came, the mechanism of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) is getting more important again as in the priority of the government. The government appoints The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)and arranges the meeting almost every month. The most outstanding ways of work in this Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) are first The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) will arrange the meeting alternating with the meeting of the economic cabinet every 2-3 month. the Office of the National Economics and Social

Development Board, The Joint Standing Committee on Commerce, Industry and Banking and Tourism Council of Thailand are coordinating to moderate agenda and present in the meeting. Second, the agenda involving with approval of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) proposed to the cabinet to approve, agree or acknowledge, the ministries that involve in that subject has already given their opinions in the meeting and it is not to ask for the opinions from ministers in The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) again. (The Federation of Thai Industries The appointment of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in provinces and provincial clusters).

Besides, in the government of Abhisit, there is a big change of structure and form of administration of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) which is the establishment of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in provinces and provincial cluster by decree of administration of province and province group in integration 2008. It began drafting in the government of Surayut Julanon 2007 by section 52 paragraph 3, section 53/1 paragraph 3 and section 53/2 of Land Administration Act 1991 additional amendment by Land Administration Act (issue 7) 2007 section 11 (3) determine Integrated Provincial Administrative Committee (IPAC) to have authority in promoting and coordinating the development between public civil society, and private business sector for building an atmosphere to be appropriate for investment. The government persuades the private business to invest in the province and let it develop sustainably" (The Thai Chamber of Commerce, Appointment of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in provinces and provincial clusters: Online). Then the Ministry of Interior has appointed The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in provinces for the total of 75 provinces and Public and Private Joint Committee for Economic Resolution in provincial clusters totally for 18 groups

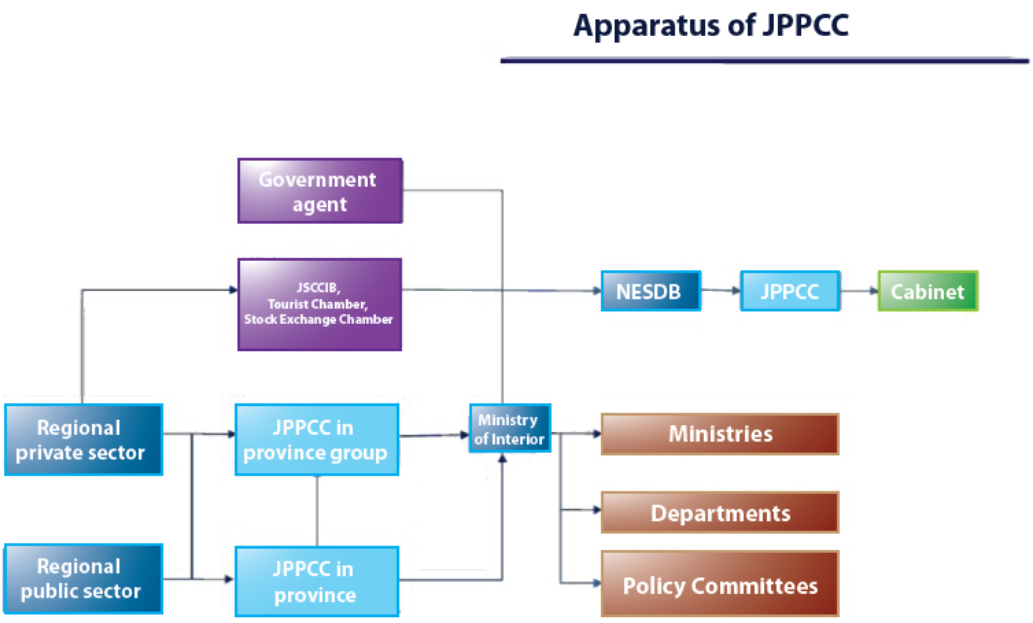

Figure 6.2 Apparatus of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)

Source: National Economic and Social Development Board, 2013b.

However, in the part of the process, there is an establishment of the Office of the Secretary of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in province and province group. The president of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in province and province group considers personnel from the government agencies in the province or province group and the private sector appointed by Provincial Chamber of Commerce, Provincial Council of Industry, Tourism Business Association assigned by The Thai Chamber of Commerce to be the Secretary. Besides, there is budget provided for supporting the process of the Office of the Secretary of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in province and province group which is the annual plans from the budget of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in province of the provincial office (The Thai Chamber of Commerce, Appointment of The Joint Public Private Sectors

Consultative Committee for Solving Economic Problems (JPPCC) in province and province group)

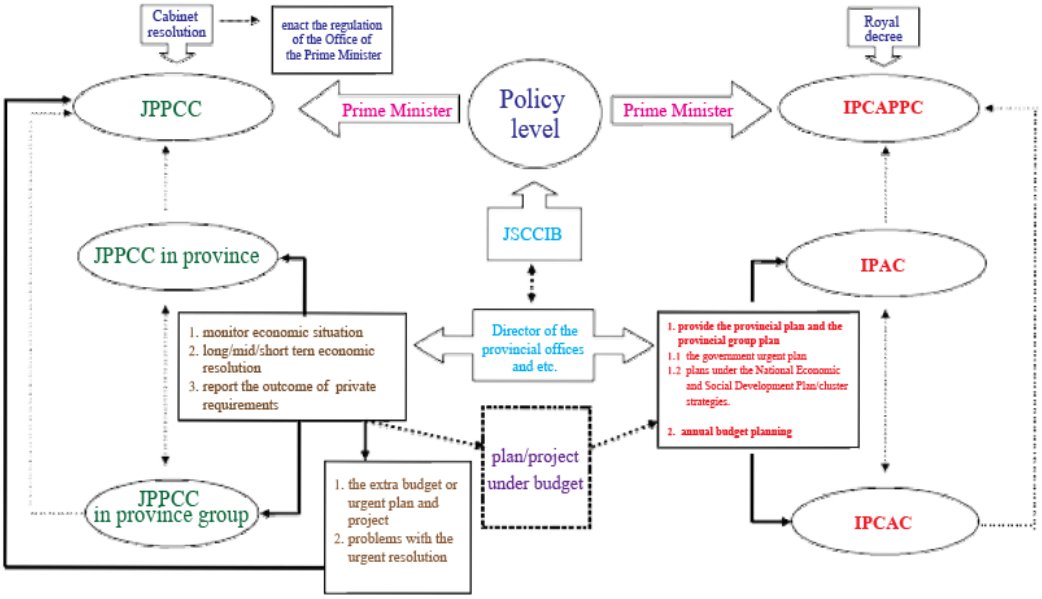

Figure 6.3 The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC)

Source: Thai Chamber of Commerce, 2016.

However, regulatory mechanism and the provincial administration process in integration consist of three levels of administration (National Economics and Social Development Board, 2013a, pp. 2-5) as follows:

1) The National Mechanism is Integrated Policy Committee for Administration of Provinces and Provincial Clusters. Prime Minister is the President. Important committees consist of every Deputy Prime Minister, Minister of Chancellor of the Exchequer, Minister of Interior, Permanent Secretary, Permanent Secretary of the Ministry of Interior, Secretary-General of the Prime Minister, Cabinet Secretary, Director of Bureau of the Budget, Secretary General of the National Economics and Social Development Board, Association President of PAO, Association President of The National Municipal League of Thailand (NMITL), Association President of SAO, President of F.T.I, President of the Thai Chamber of Commerce, Professionals from the Public Sector Development Commission which is not more than three persons, not

more than two representatives of Civil Society assigned by Prime Minister, Secretary-General of National Vocational Training Coordination and Labor Development is the committee and secretary.

2) The mechanism in provincial clusters is Integrated Provincial Clusters Administrative Committee. The Provincial Governor who is the Chief of the Provincial Clusters Operation Center is the President. Provincial Governors in Provincial Clusters are the Vice-President. Important committees are representatives from service section chief in provincial clusters, President of PAO in provincial clusters, representatives form civil society, representatives from the private business sector and the Chief of Governor's Office is the committee and secretary.

3) The mechanism in provinces is IPAC. The provincial governor is the President. Important committees are every Vice Governor, representatives from section chief having office in the province, representatives from enterprises in the province, representatives from local governments, representatives from civil society, President of Chamber of Commerce, President of provincial F.T.I., and Chief of provincial office is the committee and secretary.

Although the Ministry of Interior has an important role in public administration in regions and provinces, it has its main missions. Although it coordinates The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in provinces and provincial clusters, it does not have any authority in practical term. In addition, it still has problems with the integration between the development plan of the locals, provinces and provincial clusters. As in the analysis of weaknesses of the development plan in provinces and provincial clusters in Angthong and Petchaburi, "The connection among Provincial Administrative Organization (PAO), Subdistrict Administrative Organization (SAO), Municipality and the planned community to the development plan in provinces and provincial clusters is less, so a lot of projects in the planned community are not contained in the development plan in provinces. Besides, the time frame of each plan is overlapping. The information is limit. The capacity of personnel in the development plan in agencies in provinces is limit. The participation from local governments and people are not intensive enough. Therefore, the driving of the national development plan through the development plan of provinces and provincial clusters does not achieve concretely." (National Economics and Social Development Board, 2013a, pp. 1-2).

However, the benefit of the integrated administration in provinces and provincial clusters is the mechanism of Integrated Provincial Administrative Committee (IPAC) and Integrated Provincial Cluster Administrative Committee (IPCAC) supports the development plan in provinces and provincial clusters. The plan is in accordance with the national plan and policy such as the National Economic and Social Development Plan, government's policy, Strategy Formulation, and Strategy Framework. Besides, the mechanism of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) in provinces and provincial clusters is also a mechanism for integrating plans and projects of the private sector in the development plan in provinces and provincial clusters. (National Economics and Social Development Board, 2013a, pp. 1-2).

On the other hand, the structure of The Joint Public Private Sectors Consultative Committee for Solving Economic Problems (JPPCC) consists of many government officials who have the high authority to make decision, so JPPCC should have some authorities and efficiency in pushing the resolution of the problems and obstacles actively and successfully. The private sectors expect JPPCC to resolve all of the private sector's problems and they want it to be Superpower, so it can mandate the government agencies to follow. However, the government insists that JPPCC is only an advisor for the government in economic development and advising the private sector to develop as the private sector expected. JPPCC is not Superpower, so the private sectors have an opinion that JPPCC has only authority but cannot do anything. (Wisa Poonsirirat, 2010, p. 76). Simultaneously when considering the role of the Office of the National Economics and Social Development Board as the Secretary of JPPCC, it clearly confirms the picture of JPPCC especially in the time that the government administrators do not pay attention to JPPCC anymore. Thanong Pittiya said,

> Before working with The Federation of Thai Industries, I acknowledge that some people thought it has "the authority but cannot do anything". It is a government agency that has duty to plan the national economic and social development plan, gather the statistics of national income and economic information and work in academics. However, it is only senior official having

> duty in its framework. It cannot command anyone to do anything. The problem is that the past National Economic and Social Development Plan is only the way of development. When it is sent to ministries, bureaus, and departments, each year's budget is not allocated in order of priority. Each year the budget is increasing, but the government does not know for sure that it should do what, before or after to achieve maximum benefits" (National Economics and Social Development Board, 2010, p. 210)

However, when Thairakthai party is the government, the mechanism of JPPCC has changed to JPPCC in regions. It does not have outstanding works. It solves only the problems proposed in the meeting.

Then, the mechanism of JPPCC is getting important again when there is coup d'état on May 22, 2014. Chief of the National Council for Peace and Order (NCPO) has an order to appoint JPPCC Council on June 16, 2014. Head of NCPO is the President. Deputy Chief of NCPO is the Vice President. Then on October 29, 2014 there is the command of the Office of the Prime Minister No. 142/2557 to improve element and authority in JPPCC. Prime Minister is the President. Deputy Prime Minister (Preediyathorn Tevakun) is the Vice President. Chiefs of six private institutes which are The Thai Chamber of Commerce, The Federation of Thai Industries, The Thai Bankers Association, Tourism Council of Thailand, Federation of Thai Capital Market Organizations (FETCO), Thai National Shippers Council (TNSC) are the committee. The Secretary General of the Office of the National Economics and Social Development Board is the committee and the secretary. Deputy Secretary General of the Office of the National Economics and Social Development Board (Thanin Phaaim) is the committee and undersecretary. The meeting is scheduled once a month. (Minutes of JPPCC 1/2558 on February 19, 2015). It is noticeable that an appointment of this JPPCC Council, aside from an increase of two private organizations which are FETCO and TNSC, there are also an increase of four government agencies that are Minister of Science and Technology, Minister of Social Development and Human Security, Attorney-General of the Ministry of Justice and Mister of Education.

Meanwhile the Ministry of Interior is still doing its work in coordination JPPCC in various levels. After it had appointed JPPCC Council in provinces and provincial clusters, it arranged the meeting of JPPCC in provinces once a month and JPPCC in provincial clusters a few months a time. The minutes of JPPCC in provinces are to be reported at least once a month and provincial clusters at least a few months a time. (Minutes of JPPCC meeting 1/2558 on February 19, 2015).

However, when considering the structural administration of the mechanism of JPPCC which has both central and regional (which is the provincial clusters according to Decree of integrated administration in provinces and provincial clusters 2008), in provinces clings on the structure of bureaucracy administration, it still has the structure of the centralization which divides the public segment into central, regional and local. After Constitution of The Kingdom of Thailand B.E. 2540 (1997) is effective and binding, the government has commitments to follow which are decentralization of the administration and public reform. When there is an announcement of Decree of the integrated administration in provinces and provincial clusters B.E. 2551 (2008) which looks like it is going to decentralize to provinces and provincial clusters, but in fact it gives the authority of administration to the provincial governor a lot. Therefore, when the government of Abhisit Vejjajiva and General Prayut Chan O-Cha turn their interests to the central JPPCC again, the cooperation between public and private sector are more binding to the bureaucracy. The difference is when the government pays attention to the mechanism of JPPCC and Prime minister is always the President of JPPCC, the command to implement the policy in ministries and government agencies may be effective immediately as in the case of vocational education. Duangnapa Mogkaranurak (2011, p. 118) presents an expert's opinions to the cooperation in administering and producing industrial technicians.

> Whether or not the vocational education will be successful or not does not depend on only the Ministry of Education, the Ministry of Industry or the Ministry of Labor, but it may also involve the Ministry of Tourism or other ministries. They have to make regulations and sign an agreement together, so it will be accomplished. What kind of labors that The federation of Thai Industries wants? The Ministry of Education has to produce what kind of

> personnel to meet the establishment and labor market demands. Only now the three ministries do not discuss together and the one who has to be the host is Prime Minister. If it is not Prime Minister, the problems will not be finished.

As in the other two cooperations which directly relate to the industrial technicians production; 1) National Vocational Training Coordination and Labor Development Board and 2) The National Vocational Training Coordination Board. They have clear strategy of labor production and development, but they do not have many achievements. Not only has it lacked the direct command from Prime Minister but also the assessment of results of operations. From the intentions of the private sector in solving the shortage of industrial labors, the government administrator talks about the problems of the administration.

> Sincerity of the private sectors in participation in F.T.I. and JPPCC is less or more or they only want the social status. We used to present that we would train prisons and conscripts for them. They said that they would accept them to work. When we had trained them, the private sectors did not accept them. The problem is the private sectors often come to sign in the agreement. They have been taken the photos and they publish a statement. They do not do as they promise. Therefore, I think we should have public organizations to help check the agreement. People should ask, follow and check the government whether the government does it as it reports in writing or not. If it does not do it, it should be punished such as reducing the budget, reducing help or cooperation whereas in people, we use social sanction. (Thanit Numnoi, personal communication, August 21, 2015)

National Vocational Training Coordination and Labor Development (NVTCLD) is under Regulations of the Office of the Prime Minister in National vocational Training Coordination and Labor Development B.E. 2522 (1979). Prime Minister or Deputy Prime Minister (assigned by Prime Minister) is President. Minister of Labor is Vice President. Director General of Department of Skill Development is the committee and secretary. The Committees are Permanent Secretary of the

Ministry of Industry, Permanent Secretary of the Ministry of Education, Department of Labor Protection and Welfare, Director of Bureau of the Budget, Secretary-General of the Office of the National Economics and Social Development Board, Director-General Department of Employment, Secretary-General of the VEC, Secretary-General The Thai Board of Investment (BOI), Permanent Secretary of the Ministry of Justice, Secretary-General of Social Security Office, Permanent Secretary for the Bangkok Metropolitan Administration, Permanent Secretary the Ministry of Interior, Permanent Secretary of the Ministry of Agriculture and Cooperatives, Permanent secretary of the Ministry of Social Development and Human Security, President of F.T.I., President of The Thai Chamber of Commerce, Director of the Office of Small and Medium Enterprises Promotion, Permanent Secretary of the Ministry of Tourism and Sports, Employers Confederation of Thai Business (ECOB Thai), Labor Congress of Thailand, Private Industry Council of Labor, Labor Employee Council of Thailand, The Employers Confederation of Thai Agriculture and Business Industry (EABI), Permanent Secretary of the Ministry of Science and Technology, President of Thailand Development Research Institute (TDRI), Personnel Management Association of Thailand (PMAT), and Professionals. Director General of Department of Skill Development is Secretary. There are 33 people total. The provincial subcommittee is Provincial Vocational Training Coordination and Labor Development. However, Prime Minister often assigns Deputy Prime Minister to act as the President.

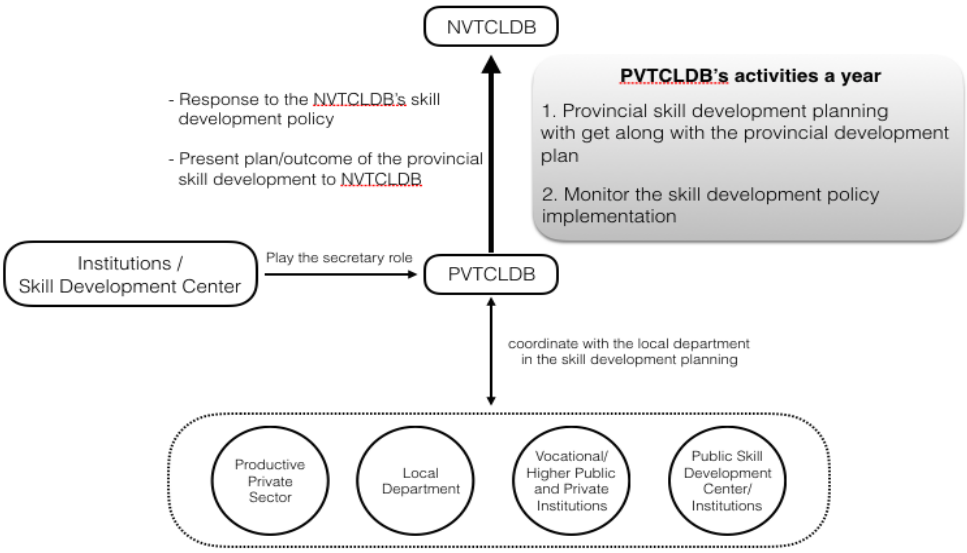

Figure 6.4 National Vocational Training Coordination and Labor Development (NVTCLD)

Before becoming The Joint Public Private Sectors Consultative Committee for Developing Vocational Workforce, previously it was The Joint Public Private Sectors Consultative Committee for Developing Education for Profession which was appointed by the cabinet on April 7, 1993 substituting for The Joint Public Private Sectors Consultative Committee for Development of Medium Workforce. The intention is to be the central organization for education, following and solving the problem of the workforce production in quantity and quality to meet labor market demands and change of economy, society and technology. (Boonyasak Jaijongkit, 1998, p. 62). After that it is dissolved by the cabinet on February 11, 2003 on the subject of the cancelling The Joint Public Private Sectors Consultative Committee for Developing Education for Profession proposed by the Ministry of Education (2012). The reasons are as follows:

> For the unity of vocational education management, due to the National Education Act (amendment) has already been considered in the process. The Ministry of Education has made and proposed Vocational Education Draft

> B.E. …section 20 of National Education Act B.E. 2542 (1999) to the cabinet which has already been considered by the Council of State. In the act, vocational education commission is the national commission. There are elements of commission, authority, principles and aims as in The Joint Public Private Sectors Consultative Committee for Developing Education for Profession. Therefore, for the unity of the draft, the Ministry of Education is proposing to cancel The Joint Public Private Sectors Consultative Committee for Developing Education for Profession and holding Vocational Education Draft B.E. …. to be the main principle in vocational education management of the country when the act is enforced."

Then Jaturon Chaisaeng appoints The Joint Public Private Sectors Consultative Committee for Developing Vocational Workforce by the order of the Ministry of Education NO. 876/2556 on October 18, 2003. Minister of Education is President and there are 33 joint public private sectors committees as follows: 1) Chairman of the Vocational Education 2) Secretary-General of the Private Education Commission 3) Secretary-General of the Basic Education Commission 4) Secretary-General Office of the Non-Formal and Informal Education (NFE) 5) Secretary-General of Education Council 6) Secretary-General of the National Economics and Social Development Board 7) Permanent Secretary of the Ministry of Industry 8) Permanent Secretary of Commerce 9) Director General of Department of Employment 10) Director General of Department of Skill Development 11) Director General of Department of Industrial Works 12) Director General of Department of Agriculture Extension 13) Director General of the Revenue Department 14) Director of Thailand Professional Qualification Institute 15) Secretary-General of BOI 16) Secretary of the Thai Bankers Association 17) Director of the Office of Small and Medium Enterprises Promotion 18) President of F.T.I. 19) President of The Thai Chamber of Commerce 20) President of Tourism Council of Thailand 21) Government of Industrial Estate Authority of Thailand 22) Representatives of Agricultural Organization 23) Representatives of Local Governments. Secretary-General of Vocational Education Commission is the committee and secretary. Deputy Secretary General of Vocational Education Commission is the committee and undersecretary. (Public Relations VEC on October 31, 2003).

The authority of this committee is considering and advising ways and measures in solving the problem of the production, development and demands of workforce, planning quality and quantity workforce, promoting and supporting various forms of vocational education in dual system and vocational standard, promoting cooperation between public and private sectors, publishing advancement of public and private joint committee including labor information.

Now there is an appointment of 33 professional groups of the Joint Public Private Sectors Consultative Subcommittee for Developing Vocational Workforce for supporting the Joint Public Private Sectors Consultative Committee for Developing Vocational Workforce. Each group will have the President from Representatives of the business group, Vice President of F.T.I. of each of each industrial group and the Thai Chamber of Commerce except the energy and plastic group. Its duty is to determine workforce demands in each professional group for planning vocational workforce production, promote and support professional qualification, develop vocational curriculum for students to have professional capacity acceptable for the establishment, push vocational graduates to have compensation by capacity, promote and support the advancement of vocational education in the dual system, promote and support the development of potential and capacity of vocational teachers and trainers in the establishment, urgently solve the shortage of workforce in the country both Thai workers and alien labor, promote and support adjusting the image vocational education, support and promote Thai vocational education to meet Asian and Global standard (Office of the Minister 42/2558 the meeting of the Joint Public Private Sectors Consultative Committee for Developing Vocational Workforce 1/2558 on February 5, 2015).

We talk about National Vocational Training Coordination and Labor Development and the Joint Public Private Sectors Consultative Committee for Developing Vocational Workforce in this part to indicate the similarity of the mission between the two committees and the overlapping of chain of command. In the case of the Joint Public Private Sectors Consultative Committee for Developing Vocational Workforce which is the committee in ministry level and President of the committee is the minister. However, it has appointed chief executives from other ministries to be the committee which make practical mission difficult to achieve. Moreover, private

sector representatives are the same in every committee especially representatives from three private sector organizations.

However, the advancement of National Vocational Training Coordination and Labor Development and the Joint Public Private Sectors Consultative Committee for Developing Vocational Workforce is the automotive industry. The concrete work of National Vocational Training Coordination and Labor Development is an approval from the cabinet about the strategy of automotive workforce development in 2013 and the establishment of Automotive Human Resource Development Academy: AHRDA in 2014in the area of Samutprakan Institute For Skill Development which is the cooperation among Department of Skill Development, the Ministry of Labor, F.T.I., TAIA, Thai Auto parts Manufacturers Association (Automotive Human Resource Development Academy: AHRDA, Department of Skill Development: Online). In the case of the Joint Public Private Sectors Consultative Committee for Developing Vocational Workforce, the advancement of Skill Cluster is Professional Parts Group for Vocational Human Resource Development which has been signed a memorandum of cooperation between Vocational Education Commission, Department of Skill Development, F.T.I., and TAIA on August 27, 2014.

The success of the two committees in automotive production and development beside because of the industrial advances and the industrial target group of the country, it is because of the roles of Thawon Chailaithien. He is the President of the Subcommittee of Automotive Workforce Development Strategy Drive of National Vocational Training Coordination and Labor Development, the committee of the VEC, President of Automotive and Parts Cluster, President of The Human Capacity Building Institute, Vice President of F.T.I., Senior Advisor of Denso (Thailand) Co., Ltd.. Thawon was the Subcommittee of Vocational Education which he had cooperated in the dual system since the VEC was still the Department of Vocational Education under the Ministry of Education. Now he is still has the important role in industrial technicians development with the VEC through “Dual System in Establishments of F.T.I for Support Education Foundation Project” by The Human Capacity Building Institute F.T.I.

6.3 Ways of Cooperation Development in the Industrial Technicians Production: Policy Level

Not only the change of Minister of Education directly affects the clearness and the continuation of the industrial technicians production policy, but also it affects the integration within the government itself and between the government and the private sector. In the case of the OBEC and the VEC which are the government agencies under the Ministry of Education, they have overlapped mission in the 12 years of basic education. They arrange high school education and vocational education which leads to the separation of working. If it is the problem between the ministries, I won't be surprised because the law may be out of date so it leads to the overlapping of the work. However, the scrimmage of headcount subsidy between the two agencies reflects an attempt to decentralization in the past. However, it turns out to be that the power is still on the top five of the education that is the Office of the Permanent Secretary, the Ministry of Education, the OHEC, the Office of the Education council, the OBEC and the VEC. Consequently, after an adjustment of the administration structure of the Ministry of Education since 2003, the increase of proportion of general education students to vocational education students is never close to the target as expected. Moreover, the target of the VEC has been interfered by the political as in the case of Jaturon Chaisaeng. He has a clear policy to increase the proportion of the vocational and diploma students for solving labor market demands but it has been rejected, so he has to adjust his policy.

Until there is the command from Prime Minister with the supervision of Minister of Education which shows the unity of policy more clearly, it ceases the problem between the two agencies. The dual system is the intend from Prime Minister that wants the students to have professional skill, so the Ministry of Education is arranging two types of dual system: 1) junior high school students study additional professional subject and 2) senior high school students study general education with vocational education for three years and receive two certificates. There will be the budget allocation in study stationery and travel expenses. (Office of the Permanent Secretary, Bureau of Policy and Strategy, Meeting Documents, Super board of the education and policy development October 30, 2015). A few days later the VEC

announces the ways to operate the policy with the OBEC immediately. Furthermore, it also turns to cooperate with NFE to produce vocational labors to meet labor market demands immediately.

Besides, from the opening curriculum of vocational certificate of both Rajamangala University of Technology group and the VEC, though, in the past Rajamangala opened the curriculum for producing students for its own university, later it adds choices for students to have more chance to receive vocational certificate too. However, there are the questions to question about the ways to produce industrial technicians in Thailand nowadays and Skill Set which is operated by Department of Skill Development, the VEC and Thailand Professional Qualification Institute. Of the three agencies, the latter two has just begun the operation. However, at the end of 2015, Prime Minister has an order to integrate the assessment of labor skill of three agencies altogether to reduce steps and students' expenses. Although it is in the steps of preparation, the agencies are responding to it enthusiastically.

The cooperation between public and private sector in producing industrial technicians still lacks integration. Although National Vocational Training Coordination and Labor Development is a national policy, President has been Deputy Prime Minister all along. The Ministry of Education has appointed the Joint Public Private Sectors Consultative Committee for Developing Vocational Workforce. Minister of Education is the President and Committee Member of the two committees: 1) National Vocational Training Coordination and Labor Development and 2) the Joint Public Private Sectors Consultative Committee for Developing Vocational Workforce, but the weird is both of them work separately, so there is an obvious overlapping. As in the case of automotive industry, the success comes from the personal factor. In conclusions, it's because of we put the right man on the right job. However, when going back to consider the success of V-ChEPC, it emphasizes the importance of personal factor to the cooperation between public and private sector; the success of profession, social acceptance, and personal relationship.

From the success of the cooperation between public and private sector in producing industrial technicians, aside from the vision and leadership of the school director and the entrepreneur, the strong potential of the industrial group through the central organization as in the case of Automotive and Parts Cluster and Petroleum

Institute is also important. They promote and coordinate to solve the problem of quality labor demands. They also act in proactive role with the school to produce industrial technicians seriously. Importantly the leading role as the industrial group intermediary helps to reduce the problem and obstacle of bureaucracy and political system which affects the continuation of the operation.

Therefore, the level of authority does not always cling on Prime Minister as in the study of Duangnapa Mogkaranurak (2011). If the private sector has necessity, it acts in proactive role to let the mechanism of the government help solve the problem. However, it has to be the direct interested person and also has the leading power in practical. The government has to be flexible in the administration for cooperation in solving the private sector's problems. As in the case of cooperation between Department of Vocational Education (previous VEC) and Thai Gem and Jewelry Traders Association, the Ministry of Commerce, in 1993 under the command the Ministry of Education, it causes obstacles to achieve the target to develop Thailand to become the center of Gem and Jewelry in the region. It leads to the curriculum of vocational education in dual system in the field of gem and jewelry to lift up knowledge for officers and experts in the establishment. The Ministry of Education agrees and approves the curriculum and let Department of Vocational Education and interested agencies use widely in 1994 which is another development to an announcement of the extension of vocational education in dual system all over the country in 1995 as said in the previous chapter. However, when the structure of the Ministry of Education has changed since 2003, the question is whether the success in the past can happen again or not.

CHAPTER 7

CONCLUSION AND RECOMMENDATION

The purposes of this dissertation are, firstly, to study the problems of the industrial technician production in Thailand and secondly, to analyze the methods of solving the problems of the industrial technician production in Thailand.

From the result of the study, the only role and responsibility of the Office of the Vocational Education Commission is to increase the quantity of the industrial technician production, and not to meet labor market demands. There has been little cooperation among relevant public sectors and they work individually, especially among the Office of the Vocational Education Commission, Department of Skill Development and Thailand Professional Qualification Institute (Public Organization) in skill set.

Besides, the study found that there has been little cooperation between the public sector and the private sector in the industrial technician production in Thailand. It means that although there has been more cooperation between the public sector and the private sector in the joint commission in the industrial technician production recently and they has just begun to plan to work together more since 2009, it has been only in the policy and not accomplished yet except for the Automotive Industry and the Automotive Parts, and the Petrochemical Industry.

Sum up, the political factor, which is the changings of minister of the Ministry of Education and the lack of unity in the executive branch, affects policy continuum and trust from the industrial sector in supporting the production and improving labor skill. Furthermore, not only the insufficient cooperation between the related public sectors consisting of the Ministry of Education, the Ministry of Labor, and the Ministry of Science and Technology, but also the founding of the public-private partnership, cannot act as key mechanisms to solve such problem as they were during the Gen. Prem's administration. Besides, these mechanisms, which are centralized in their character, act like the government bureaucracy and are separated into the central,

regional, and provincial part. Lastly, the committees within the public-private partnership work individually in spite of the fact that their purposes are almost the same. All of these factors directly affect the formation and the implementation of industrial technician production policy in Thailand, which is consistent with the hypothesis of the study.

In order to accomplish the goals in promoting the vocational education system, the public agencies should coordinate with each other and pay close attention to the industrial technician production. The following are the things the government should do to support VET:

7.1 Contributions

This study provides both practical as well as theoretical contributions.

7.1.1 Contribution to Practice

For the ways to solve the problem of industrial technicians production and development in Thailand, the researcher has suggestions as follows:

1) The VEC must build “The College Model” to motivate vocational students that they are not second citizen. It is the building of “Master Industrial Technicians”. It has to select the school model in every big province or region to be the study place for erudite and capable teachers with educational aid ready for smart children to come to study. It should provide scholarship and arrange the curriculum with the establishment for guaranteeing that those who graduate vocational education will have jobs and a better income. It should use Science Based Technology College to be the model.

2) The VEC should increase more high school students in Science Based schools by expanding the number of classroom in those schools, so it won’t be too much burdensome in the investment. Therefore, there will be more increasing in the number of students in science and technology which will be beneficial to the development of technological production and R&D development for industrial development of the country in the long run.

3) The VEC should promote the schools that have readiness to manage vocational education in the dual system to arrange the curriculum for diploma to five

years. Due to the context of Thai society, labor legislation won't allow to hire the youth under 18 years old, so it causes an important obstacle to the training in the establishment. Besides, due to the age, it isn't popular for Thai youth to enter labor market. Therefore, the school should mainly provide students in vocational certificate level with theoretical knowledge coupled with educational durable articles support before they enter the establishment's training in diploma.

4) The VEC, Department of Skill Development and Thailand Professional Qualification Institute should participate in determining Professional Qualification Standard to reduce the overlapping in assessment of labor skill and build the confidence for the entrepreneur to pay by labor capacity. Besides, it is the way to adjust base salary of diploma to be similar to bachelor's degree which will solve the value of degree craziness in the long run.

5) The Ministry of Education should coordinate with the Ministry of Labor and the Ministry of Industry in developing vocational guidance by training student counselors to have knowledge in labor market and see the importance of having a job more than an education without judging the students' skill. They should promote vocational guidance coupled with educational guidance. They should coordinate with the industrial sector closely by inviting the lecturer from the industrial sector to indicate that working in the industrial sector can have career advancement.

6) The government should dissolve the VEC and department of Skill Development because of the overlapping in many missions, together with National Vocational Training Coordination and Labor Development and the Joint Public Private Sectors Consultative Committee for Developing Vocational Workforce to establish the "National Training Board". Its mission will be supporting and supervising vocational training in the dual system, professional training and continuous education as well as administering "Skill Development Promotion Fund" which is now under Department of Skill Development to produce workforce systemically and Prime Minister is the President.

7) The government should improve the structure of JPPCC in provinces and provincial clusters by reducing the mission in the part of Joint Public Private Committee, Bureau of Provincial Administration Development and Promotion, the Office of the Permanent Secretary for Interior, to avoid the budget

limit. Although the Ministry of Interior has authority to administer and order in provincial level, however, in government administration every agency has its own original affiliation in the central. The government should promote private organizations such as Chamber of Commerce in provinces and provincial clusters to have a role in more encouraging the government agencies to work through the Thai Chamber of Commerce and F.T.I. It should establish an institute that has duty to tie or to be the center for the private sector's cooperation to truly have unity and efficiency in the type of Intelligence Unit. It should support the private sector's role in determining attitudes or ways in cooperation with the government. However, the institute has to support the private sector to cooperate with the government continuously and immediately.

8) The government should promote vocational education in the dual system to respond local demands and protect the immigration and concentration of labor in the industrial estate. However, first they should consider operating in the strategy of provincial clusters development in accordance with the establishment of vocational education institutes in Area Based of the Ministry of Interior. The Ministry of Education, the Ministry of Labor and Social Welfare, the Ministry of Industry and the Ministry of Interior should coordinate with the private sector in determining the strategy of industrial workforce plan and production in Area and Field Industry Based under close cooperation with regional universities.

9) The government has to focus on rebuilding social value about education and work. It has to emphasize the importance of education; it is for a job not for a certificate. It has to indicate children and parents to see career path, so they can plan their career in the future. The government has to make them see the good points in studying in vocational education that they can study and work at the same time, so they can have income while they are studying from diploma to bachelor's degree due to their readiness. Students do not have to take a loan to be in debt with the government since they are young and do not have a job to do. Besides, the dual system is the educational system that helps develop the maturity in work and social life and it also makes students proud that they can earn a living by themselves and help their family. Importantly when they have to study and train at the same time, they won't have time to form a group and start the fight.

10) The government should support the establishment of professional association of industrial technicians to promote the quality of industrial technicians to meet standard. It should perform as the representative of the professional group to determine the professional standard of the country which will lead to the professional standard acceptance and encourage having the compensation system by the qualification concretely as in the case of developed countries especially in North Europe.

7.1.2 Contribution to Theory

1) While strategic location and adequacy of the establishment are both necessary economic conditions, they are by no means adequate economic condition to support the management of dual vocational training systems. This is because there are other imperative economic conditions such as income levels of the local population, as well as, the democratic structure of the country's overall birth rate that need to be considered.

2) Although political factors tend to affect continuity of policies aimed at producing Thailand's industrial technicians, studies revealed that political factors may not be an obstacle for cooperation at operational levels because there are clear, identifiable stakeholders from the sector who are directly affected by any labor shortages involved and have authority to direct operators in its industry. At the same time, educational administrators have clear vision, strong leadership and clear intentions to maximize educational benefits for students; all concerns related to labor shortages can be resolved.

3) Studies of this research revealed that cooperation between the public and private sectors stems from not only mutual benefits, but also from "trust" and long-term sustainable relationships between the sectors. However, to ensure successful dual vocational training systems, business operators generally bear higher costs than educational bodies as success of system greatly influences the success and survival of their business operations, it is by no means for the educational bodies to act as the sole service provider to the system.

7.2 Further Research

The researcher suggests to study the roles of Educational Loans Funds at provincial levels and provincial union levels, including the roles of Provincial Chamber of Commerce and Dual Vocational Training systems, in creating cooperative networks in producing and developing industrial technicians that are consistent with genuine local requirements thus reducing migration of labor force to industrial estates. Further, since this study was completed before the government had clear policy of structural reforms of the Ministry of Education, it is suggested that further research on how such reforms may or may not induce changes in the production of industrial technicians be carried out. Also, there should be a study on developments of other professional group. (Skill Clusters) as results of leading roles taken by the public or private sectors and to what level and so on.

More importantly, since the core of this study focused on identifying issues and developments involved in the production of industrial technicians, government policies aimed at addressing concerns with the proportion of students undertaking vocational courses by providing bachelor Degree education to encourage more students to undertake vocational courses were issued in 2014 with first graduates in 2016. Consequently, it is suggested that further studies should be carried out on the level of success of such policies and their abilities to produce engineers in the fields of engineering technologies and operations that are unlike engineer produced by Rajamangala group, and especially, could be well response to the skill set of market demand or not.

BIBLIOGRAPHY

Al-Sa'D., Ahmed. (2007). *Evaluation of students' attitudes towards vocational education in Jordan.* Retrieved from https://www.dspace.mah.se/bitstream/handle/2043/5259/Thesis.pdf?sequence=1&isAllowed=y

Allen, M. (1999). *Assessing effectiveness in four corporate universities.* (Doctoral dissertation). University of Southern California, Ann Arbor.

Alongkot Yawai. (2006). *Development of the co-operative education management model of Suranaree university of technology based on benchmarking with foreign higher educational institutions.* (Unpublished doctoral dissertation). Chulalongkorn University, Bangkok. (In Thai)

Almegren, A. (1996). *Private sector perception of the vocational education system in the city of Riyadh.* Saudi Arabia: King Saud University.

Amnuay Nakthat. (1997). *Developing dual vocational education of RaYong technical college* RaYong: Ra Yong Technical College. (In Thai)

Anan Ngarmsaart. (2006). *The principle of participation in the management of dual vocational education.* (Unpublished master's thesis). KhonKaen University, KhonKaen. (In Thai)

Anderson, Fionnuala. (2012). *The construction of professionalism in vocational education and training in Ireland: A mixed methods study of trainers' roles and professional development in the workplace.* (Doctoral dissertation). Dublin City University, Dubin.

Anek Laothamatas. (1996). *Business associations and the new political economy of Thailand* Bangkok: Khob Fai Press. (In Thai)

Anuchai Ramwarangkul. (2015). *Vocational education paradigm.* Bangkok: Chulalongkorn University Press. (In Thai)

Arkom Jaikaew. (1990). *Policy implementation in the southern most provinces of Thailand: A study of factors affecting success.* (Unpublished doctoral dissertation). National Institute of Development Administration, Bangkok. (In Thai)

Arunkaew Leethumchayo. (1998). *A study of the operation of dual vocational training program in institutions under the jurisdiction of technical college division, Department of Vocational Education in the Eastern Seaboard Development Area.* (Unpublished master's thesis). Chulalongkorn University, Bangkok. (In Thai)

Ashton, D. et al. (1999). *Education and training for development in East Asia: The political economy of skill formation in East Asia newly industrialised economies.* New York: Routledge.

Banlaeng Sornnil. (2005). *The study of vocational education and technology.* Bangkok: Pharppim. (In Thai)

Bardach, E. (1977). *The implementation game: What happens after a bill becomes a law.* Cambridge, Mass: The MIT Press.

Barley, Karen. L. (1998). *Adult learning in the workplace: A conceptualization and model of corporate university.* (Master's thesis). Polytechnic Institute and State University, Virginia.

Berman, P. (1978). *Designing implementation to match policy situation: A contingency analysis of programmed and adaptive implementation*. Santa Monica, Calif: Rand.

Boonkong Hanjangsit. (1997). *Human resources economics.* Bangkok: O. S. Printing House. (In Thai)

Boonyasak Jaijongkit. (1998). *Research on the draft of national education act: The roles of private, firms, business, and education.* Bangkok: Office of the Education Council. (In Thai)

Brown, I. (1994). *The role of policy implementation and its effect on policy outcomes.* Retrieved from http://www.aare.edu.au/data/publications/1994/browi94272.pdf

Bureau of the Budget of Senate the Secretariat of the House of Representatives. (2016). *Analysis of public private partnership (PPP).* Bangkok: Office of the Secretariat of the House of Representatives.

Busemeyer, M. R., & Trampusch, C. (Eds.). (2012). *The political economy of collective skill formation.* Oxford: Oxford University Press.

Cabinet Resolution. (2003). *Cabinet resolutions.* Retrieved from http://www2.eppo.go.th/ admin/cab/cab-2003-02-11.html

Calder, Kent E. (1993). *Strategic capitalism: Private business and public purpose in Japanese industrial finance.* Princeton, NJ: Princeton University Press.

Callan, V., & Ashworth, P. (2004). *Working together:Industry and VET provider training partnerships.* Adelaide: National Centre for Vocational Education Research, (NCVER).

Chaloemkwan Krutboonyong. (2009). Result tracking of co-operative education of north central higher education network. *Thai Journal of Cooperative Education, 2*(12), 67-86. (In Thai)

Charin Sitabtim. (2013). *Developing partnership on education in Thai society.* (Unpublished doctoral dissertation). Valaya Alongkorn Rajabhat University, Patumtani. (In Thai)

Chen, J. (2012). *A comparative analysis of vocational education and training system in Sweden and China.* (Doctoral dissertation). University of Chicago, Chigo.

Chringchit, T. (2002). *Cooperative school of engineering activities in supports of business and industry in Thailand.* (Doctoral, dissertation). School of Education Pittsburgh, Pittsburgh.

Crouch, C., Finegold, D., & Sako, M. (2001). *Are skills the answer?: The political economy of skill creation on advanced industrial countries.* Oxford: Oxford University Press.

Daily News. (2011a). *Ministry of finance refuses to establish 4 founding vocational institution.* Retrieved from http://www.moe.go.th/moe/th/news/detail.php?NewsID=23648&Key=hotnews

Daily News. (2011b). *Office of the vocational education commission sues sasithara.* Retrieved from http://www.charuaypontorranin.com/ index.php?lay=show &ac=article&Id=538984460&Ntype=1

Daily News. (2014). *Oye not support vocational education to tech bachelor degree.* Retrieved from http://www.dailynews.co.th/world/217559

Denzin, N. K. (1978). *Sociological methods: A sourcebook.* New York: McGraw-Hill.

Development Industrial Foundation News. (2010). *Mab Ta Phut technical college: Summary of the V-ChEPC Operation from 2008-2010.* Retrieved from http://mtptc.ac.th/ (In Thai)

Department of Employment. (2015). *Factors affecting grade 9 student's decision between academic and vocational.* Retrieved from http://lmi.doe.go.th

Developmental State. (n.d.). *Developmental state.* Retrieved from https://en.wikipedia.org/wiki/Developmental_state

Deyo, F. C. (Ed.). (1987). *The political economy of the new Asian industrialism.* London: Cornell University Press.

Duangnapa Mogkaranurak. (2011). *The future of Thai vocational education in the next secade (2011-2021).* (Unpublished master's thesis). KhonKaen University, KhonKaen. (In Thai)

Dye, T. R. (1987). *Understanding public policy.* Englewood Cliffs, NJ: Prentice-Hall.

The Education Council. (2010). *Minutes of the education council 3/2010 on 9* Retrieved from http://onec.go.th/onec_backoffice/uploaded/Category/ OECBoard/ReportBoardMeeting3_2010-03-03-2011.pdf

Edward, George C. (1980a). *Implementing public policy.* Washington, DC: Congressional Quarterly Press.

Edward, Goerge C. (1980b). *Implementation theory and bureaucracy.* Washingtton, DC: Congressional Quarterly Press.

The Federation of Thai Industries. (2002). *The legend of being on the top: For the 35th anniversary.* Bangkok: The Federation of Thai Industries. (In Thai)

Goggin, M. et al. (1990). *Implementation theory and practice: Toward a third generation.* New York, NY: HarperCollins.

Gornitzka, Å., Kyvik, S., & Stensaker, B. (2005). Implementation analysis in higher education. In *Reform and change in higher education* (pp. 35-56). Netherlands: Springer.

Gurnack, A. M., & Sharon, S. H. (1987). The emergence of policy implementation analysis. *International Journal of Public Administration*, *9*(4), 363-396.

Hahn, A. J., Greene, J. C., & Waterman, C. (1997). *Educating about public issues.* New York: Cornell University.

Hambleton, R. (1983). Planning systems and policy implementation. *Journal of Public Policy*, *3*(4), 397-418.

Hill, M. J., & Hupe, P. L. (2002). *Implementing public policy: Governance in theory and practice.* London: Sage.

The House of Representatives. (2006). *Report of the joint committee on vocational education act.* Retrieved from http://library2.parliament.go.th/giventake/sndoc2013.html

Human Capability Boosting Institute. (2011). *The federation of Thai industries.* Retrieved from http://www.hcbi.org/2011/images/Holly/Dual_System/Handbook-Trainer/_2_.pdf

The Human Capacity Building Institute, The Federation of Thai Industries. (2016). *Dual system project.* Retrieved from http://www.hcbi.org/2016/fellowship.asp

Isra News. (2013, May 9). *Abolishing small school!* Retrieved from http://www.isranews.org/thaireform-data-education/item/21130-สำรวจเส้นทาง...-'เสียงค้าน'-อันอื้ออึง-"ยุบโรงเรียนขนาดเล็ก".html (In Thai)

Jirapong Homsuwan. (2013). *Developing the participative management in colleges under the office of the vocational education commission.* (Unpublished doctoral dissertation). Naresuan University, Phitsanulok. (In Thai)

Jumpon Nimpanich. (2006). *Policy analysis: Frameworks, theories, and case studies* (3rd ed.). Bangkok: Sukhothaithammathirat University Press. (In Thai)

Kakilleke, D. (2010). *Vocational education and training in secondary schools: Investigation into a VET model for Papua New Guinea.* (Doctoral dissertation). The University of Adelaide, Adelaide.

Kaminskienė, L. (2008). *Social partnership in the school based vocational education and training system.* (Doctoral dissertation). Vytautas Magnus University, Magnus.

Kamol Ploryngarm. (1990). *The study of the implementing quality improvement policy of primary education of the office of the primary national education.* (Unpublished master's thesis). Chulalongkorn University, Bangkok. (In Thai)

Kamolthip Srihases. (2004). *Research for evaluating educational system provided by the partnership between state and private sector: A case study.* (Unpublished master's thesis). Chulalongkorn University, Bangkok. (In Thai)

Kanuengnit Duangjit. (1998). *The politics of public policy implementation: A case study of manpower policy.* (Unpublished master's thesis). Chulalongkorn University, Bangkok. (In Thai)

Kennett, P. (2008). *Governance, globalization and public policy.* Cheltenham, UK: Edward Elgar.

Khao Sod. (2015). *VEC.-OPDC.-AGO. To set up team for helping vocational students.* Retrieved from http://daily.khaosod.co.th/view_news.php?newsid=TURObFpIVXdNVEV4TVRJMU9BPT0=&sectionid=TURNeE5RPT0=&day=TWpBeE5TMHhNaTB4TVE9PQ= (In Thai)

Kim, Eun M. (1997). *Big business, strong state: Collusion and conflict in South Korean economic development, 1960-1990*. Albany, NY: University of New York Press.

Kla Thongkhao. (1991). *The analysis of factors affecting the success of public policy implementation: A case study of national literacy campaign*. (Unpublished doctoral dissertation). National Institute of Development Administration, Bangkok. (In Thai)

Kom Chad Luek. (2010). *Primary education office accelerate the development of small schools.* Retrieved from http://www.icons.co.th/newsdetail.asp?lang=TH&page=newsdetail&newsno=23906 (In Thai)

Kom Chat Luek. (2012a). *Different voice from AUPT!?.* Retrieved from *http://www.komchadluek.net/news/economic/146418* (In Thai)

Kom Chat Luek. (2012b). *ONEC advice to abolish school.* Retrieved from http://www.komchadluek.net/news/edu-health/82287 (In Thai)

Kom Chat Luek. (2014). *Mab Ta Phut technical college: A model for chemical engineering.* Retrieved from http://www.komchadluek.net/mobile/detail/20140902/191285.html (In Thai)

Kongkwan Sila. (2010). *An analysis of public private partnership: Financial innovation for the future.* Bangkok: Macro Economic Analysis Briefing. (In Thai)

Kriengsak Charoenwongsak. (1981). *Lesson from the U.S.: Vocational education responding to the market demand.* Retrieved from http://www.kriengsak.com/node/1981 (In Thai)

Krisman Wattananarong. (2013). *Vocational education philosophy.* Bangkok: King Mongkut's University of Technology North Bangkok. (In Thai)

Kulkan Aramthong. (2010). Raising funds in form of public private partnership (PPP). *The Journal of Public Debt, 3*, 2-4. (In Thai)

Kwanchai Sinthipsomboon. (1994). *The study of cooperation between college and business for providing Internship for high vocational student in automobile.* Bangkok: King Mongkut's University of Technology North Bangkok. (In Thai)

Leftwich, A. (1995). Bringing politics back in: Towards a model of the developmental state. *The Journal of Development Studies*, *31*(3), 400-427.

Lester, J. P., Bowman, A. O. M., Goggin, M. L., & O'Toole, L. J. (1987). Public policy implementation: Evolution of the field and agenda for future research. *Review of Policy Research*, *7*(1), 200-216.

Leung, Sui Man Anita. (2008). *The effectiveness of personal development opportunities at the Hong Kong Institute of Vocational Education (Tsing Yi).* (Doctoral dissertation). University of Nottingham, Nottingham.

Little, D. (1998). *Micro foundations, method and causation.* New Brunswick: Transaction.

Luechai Kaewsook. (2011). *Development of management strategies for vocational education institutions in response to manpower requirement of enterprises.* (Unpublished doctoral dissertation). Chulalongkorn University, Bangkok. (In Thai)

Manager Online. (2012a). *Central-the mall boost their manpower supply to support AEC for fear of the lack of skill labor.* Retrieved from http://www.manager.co.th/round/ViewNews.aspx?NewsID=9550000032346 (In Thai)

Manager Online. (2012b). *Founded! 19 vocational institution "Chaipruk" as a new director.* Retrieved from http://www.manager.co.th/Qol/viewNews.aspx?NewsID=9550000079595 (In Thai)

Manager Online. (2013). *Chula reveals that OBEC is a barrier of Thai education!* Retrieved from http://www.manager.co.th/Home/ViewNews.aspx?NewsID=9560000009055 (In Thai)

Marut Wantanakorn. (2008). *Military cycle in Thai politics: Case study of Sawannabhumi International Airport.* Retrieved from http://www.pub-law.net/publaw/view.aspx?id=1311 (In Thai)

Mayura Sripongwiwat. (1998). *A study of problems on dual vocational training in vocational certificate B.E. 1995 in the field of industrial trade in technical colleges under department to vocational education Northeastern region.* (Unpublished master's thesis). King Mongkut's Institute of Technology Ladkrabang, Bangkok. (In Thai)

Mayuree Anumarnratchathon. (2006). *Public policy.* Bangkok: Thamkamol Press. (In Thai)

McCoshah, A., & Otero, M. S. (2003). *Further education colleges' views of FE-employer Links.* Retrieved from http://webarchive.nationalarchives.gov.uk/20130401151715/http://www.education.gov.uk/publications/eOrderingDownload/RR442.pdf

Ministerial News. (2016). *42/2015 Vec. conference meeting 1/2015 5.* Retrieved from http://www.moe.go.th/websm/2015/feb/042.html (In Thai)

The Ministry of Education. (2003a). *Administrative organization of the ministry of education act.* Bangkok: Logistic Organization Press.

The Ministry of Education. (2003b). *National education act, 1999 and amendment (No. 2) 2002 with Ministerial regulations relating to compulsory education Act 2002.* Bangkok: Logistic Organization Press. (In Thai)

The Ministry of Education. (2012). *Conference summary document of the policy and development committee.* Retrieved from http://www.moe.go.th/websm/2015/oct/374.html (In Thai)

Mokkaranurak, D. (2009). *A comparative analysis of vocational education in Thailand and Germany.* Retrieved from http://ednet.kku.ac.th/~edad/cohort7_USA_papers/Duannapha.doc. (In Thai)

Mulraney, J., Turner, P., Wyatt, F., Harris, R., & Gibson, T. (2002). *The role of small enterprise in school students' workplace learning*. Adelaide: National Centre for Vocational Education Research.

Muscat, R. J. (1994). *The fifth tiger: A study of Thai development.* Armonk, NY: M.E. Sharp.

Naewna. (2012). *Situation of Thai manpower before AEC.* Retrieved from http://www.naewna.com (In Thai)

National Economic and Social Development Board. (2010). *The project of increasing role of the private sector in public project.* Retrieved from http://www.nesdb.go.th/LinkClick.aspx?fileticket=V24Knx4KOL0%3D&tabid=210&mid=735

National Economic and Social Development Board. (2011). *60 Years of National Economic and Social Development Board.* Retrieved from http://www.ebooks.in.th/604/6_%E0%B8%97%E0%B8%A8%E0%B8%A7%E0%B8%A3%E0%B8%A3%E0%B8%A9_%E0%B8%AA%E0%B8%A0%E0 (In Thai)

National Economic and Social Development Board. (2013a). *Mechanisms for moving the country forward.* Retrieved from http://www.nesdb.go.th/Portals/0/home/interest/kro52/data_1046060611.pdf (In Thai)

National Economic and Social Development Board. (2013b). *Report on the evaluation of the provincial development plan in respond to the national and social development plan.* Retrieved from http://www.nesdb.go.th/ewt_news.php?nid=3553&filename=evaluate_develop (In Thai)

National Economic and Social Development Board. (2013c). *Thailand's path to ASEAN community.* Paper for the Annual Conference 16th September at Royal Jubilee Ballroom at IMPACT Exhibition Hall. Bangkok. (In Thai)

National Education Act. (2010). *Education and care services national law act.* Retrieved from http://www.education.vic.gov.au/Documents/childhood/providers/regulation/NationalLaw0514.pdf (In Thai)

National Statistical Office. (2013). *Survey of the labor demand of the business of 2013.* Bangkok: Ministry of Information and Communication Technology.

Nipon Poapongsakorn. et al. (2011). *The linkage between college and labor market: Quality of graduated student and the lack of quality of labor.* Bangkok: Thailand Development Research Institute (TDRI). (In Thai)

Nithi Nuangjamnong. (2009). *Dynamic relations between state and interest groups in developmental state.* (Unpublished doctoral; dissertation). Chulalongkorn University, Bangkok. (In Thai)

Noppadol Sutantivanichkul. (2011). *The study of the technological capacity of Thai vocational school for the ASEAN economic community.* Bangkok: Dhurakij Pundit University. (In Thai)

Nopparut Saksiri. (2007). *The analysis of factors relating to the success implementation of information technology policy in basic school.* (Unpublished doctoral dissertation). Chulalongkorn University, Bangkok. (In Thai)

Nuttakul Runphap. (2014). The study of the impact of the abolition of small school and guideline for strengthening small school under education service area Lampoon. *E-Journal. 7*, 304-316. (In Thai)

Nuttapong Puensan. (2011). *The public-private cooperation order and the effectiveness of renewable electricity generating promotion policy.* (Unpublished doctoral dissertation). National Institute of Development Administration, Bangkok. (In Thai).

Office of National Economic and Social Development Board. (1998). *17 Years of joint public-private committee for economic affairs.* Bangkok: Phetchrung Printing. (In Thai)

Office of National Economic and Social Development Board. (2005). *State enterprise network (Cluster) for elevating the competitive advantage: Guideline and case study.* Bangkok: Phetchrung Printing. (In Thai).

Office of the Education Council. (2000). *Research report of the vocational education reform and skill formation in United Kingdom.* Bangkok: Pimdee. (In Thai)

Office of the Education Council. (2001). *University for industry: A new way of lifelong learning.* Bangkok: Office of the Vocational Education Commission. (In Thai)

Office of the Educational Council. (2006). *Privatizing education: Causes, effects and future plans.* Bangkok: Office of Educational Council. (In Thai)

Office of the Educational Council. (2009a). *A developing education act allowing legal entity for educational institution under the Ministry of Education.* Bangkok: Ministry. (Copy Document). (In Thai)

Office of the Educational Council. (2009b). *Developing guideline of Integrate teaching between Learning and working.* Bangkok: Prickwarn Graphic. (In Thai)

Office of the Educational Council. (2010). *A study of manpower demand for national manpower supply and development plan.* Bangkok: Prickwarn Graphic. (In Thai)

Office of the Education Council. (2011a). *The strategies for producing and developing national manpower during the education reform in the second decade (2009-2018).* Bangkok: Prickwarn Graphic. (In Thai)

Office of the Educational Council. (2011b). *A strategy of national manpower supply and development during the second secede of education reform (2009-2018).* Bangkok: Prickwarn Graphic. (In Thai)

Office of the Educational Council. (2012). *A study to prepare manpower supply and development for free flow of labor under ASEAN economic community*. Bangkok: Prickwarn Graphic. (In Thai)

Office of the Education Council. (2015). *Reforming education for the stable, wealthy, and sustainable future of the nation: PM Prayuth's education policy.* Babgkok: 21 Century. (In Thai)

Office of the Education Council. (2016). *Information technology and vocational manpower center VEC.* Bangkok: Prickwarn Graphic. (In Thai)

Office of the National Education Commission. (2001). *University for industry: A new approach to lifelong learning.* Bangkok: Office of Vocational Education Commission.(In Thai)

Office of the Permanent Secretary, Ministry of Education. (2009). *Vocational magazine.* Bangkok: MAC. (In Thai)

Office of the Permanent Secretary, Ministry of Education. (2015). *Conference summary document of the policy and development committee on 30* October 2015. Retrieved from http://www.moe.go.th/websm/2015/oct/374.html (In Thai)

Office of the Secretariat of the Education Council. (2010). *A study of manpower demand for national manpower supply and development Plan.* Bangkok: Prickwarn Graphic. (In Thai)

Office of the Secretariat of the House of Representatives. (2013). *Conference meeting document on the progress of the establishment of vocational education institution by the education committee of the house of representatives.* Retrieved from http://www.parliament.go.th/ewtcommittee/ewt/education/download/article/article_20130318184155.pdf (In Thai)

Office of the Secretariat of the Senate. (2007). *Legislative documents on the vocational education act proposed by the cabinet 65/2007.* Retrieved from http://library2.parliament.go.th/giventake/content_nla/2007_237.pdf (In Thai)

Office of the Vocational Education Commission. (2009). *Vocational education act 200.* Bangkok: Mac. (In Thai)

Office of the Vocational Education Commission. (2012a). *Announcement on policy and guideline for the admission of students of the institution under office of the vocational education commission.* Retrieved from http://bpp2.vec.go.th/Portals/24/student56.pdf (In Thai)

Office of the Vocational Education Commission. (2012b). *Policies, aims, and strategies on producing and developing vocational manpower to the world.* Retrieved 2015, from file:///C:/Users/win7pro/Desktop/Dissertation/%E0%B8%A2%E0%B8%B8%E0%B8%97 (In Thai)

Office of the Vocational Education Commission. (2012c). *A study of manpower demand for national production and development planning.* Retrieved from http://www.v-cop.net/nayoby.pdf (In Thai)

Office of the Vocational Education Commission. (2013). *Dual vocational education in Thailand.* Retrieved from http://dvec.vec.go.th/default.aspx (In Thai)

Office of the Vocational Education Commission. (2014). *Summary report of the keynote speaker of the director meeting of the educational institution under the vocational education commission 2/*2014. Retrieved from http://bme.vec.go.th/default.aspx (In Thai)

Office of the Vocational Education Commission. (2015). *Guideline for dual vocational education following the notification of the Ministry of Education about the standard of dual vocational education 2014.* Bangkok: Chamchuri (In Thai)

Office of the Vocational Education Commission. (2016). *Classification and the number of vocational schools.* Retrieved from http://techno.vec.go.th/%E0%B8%9B%E0%B8%A3%E0%B8%B0%E0%B8%8A%E0%B8%B2%E0%B8%AA%E0%B8%B1%E0%B8%A1%E0%B8%9E%E0%B8%B1%E0%B8%99%E0%B8%98%E0%B9%8C/%E0%B8%A3%E0%B8%B2%E0%B8%A2%E0%B8%A5%E0%B8%B0%E0%B9%80%E0%B8%AD%E0%B8%B5%E0%B8%A2%E0%B8%94%E0%B8%82%E0%B9%88%E0%B8%B2%E0%B8%A7/tabid/766/ArticleId/9872/-2559.aspx (In Thai)

Office of the Vocational Education Commission. (2017). *Number of students in the academic year 2559 by school and grade.* Retrieved from http://techno.vec.go.th/%E0%B8%9B%E0%B8%A3%E0%B8%B0%E0%B8%8A%E0%B8%B2%E0%B8%AA%E0%B8%B1%E0%B8%A1%E0%B8%9E%E0%B8%B1%E0%B8%99%E0%B8%98%E0%B9%8C/%E0%B8%A3%E0%B8%B2%E0%B8%A2%E0%B8%A5%E0%B8%B0%E0%B9%80%E0%B8%AD%E0%B8%B5%E0%B8%A2%E0%B8%94%E0%B8%82%E0%B9%88%E0%B8%B2%E0%B8%A7/tabid/766/ArticleId/9848/-2559.aspx (In Thai)

Ohashi, T. (2009). *The effect of Holland's RIASEC iterest inventory on the vocational identity development of Japanese high school students.* (Doctoral dissertation). Ohio University, Ohio.

Okimoto, D. (1989). *Between MITI and market: Japanese industrial policy for high technology.* Stanford: Stanford University Press.

Oramanee Soonthornnonta. (2009). *The disposition of implementators in the policy implementation process of skill development promotion policy.* (Unpublished mamster's thesis). Chulalongkorn University, Bangkok. (In Thai)

Parichat Jantori. (2012). Dual vocational education: Solution for Thai labor problem. *Journal of Business Administration. 35*(7/8), 29-39. (In Thai)

Park, B. G., Hill, R. C., & Saito, A. (2012). *Locating neoliberalism in East Asia: Neliberalizing spaces in developmental state.* Malden, MA: Wiley-Blackwell.

Patrinos, H. A., Barrera-Osorio, F., & Guáqueta, J. (2009). *The role and impact of public and private partnerships in education.* Wahington, DC: World Bank.

Patterson, T. M. (1998). *Corporate education and training for adult learner: A comparative study of two corporate university models.* (Doctoral dissertation). University of California, California.

Peera Charoenporn. (2014). *Public policy and industrial development*. Bangkok: Thmmasat University Press. (In Thai)

Penthipa woraarkom. (2009). Cooperative education at Mae Fah Luang University. *Thai Journal of Cooperative Education, 1*(6), 103-114. (In Thai)

Phichet Phophakdee. (2010). *Development of an administrative model of schools with the status of a legal person under the office of the basic education commission.* (Unpublished doctoral dissertation). Chulalongkorn University, Bangkok. (In Thai)

Pittaya Bovornwattana. (1984). *Public administration: Theories and approaches (1970-Present).* Bangkok: Chulalongkorn University. (In Thai)

Pittaya Chinachitpan. (2012). A model for dual vocational training development on industrial trade. *The Journal of KMUTNB, 1,* 180-190. (In Thai)

Pokpong Janvit, & Suppanut sasiwuthinat. (2013). *Developing human capital for productivity.* Paper presented at the Annual Conference (2014) by (TDRI) and Office of National Economic and Social Development Board on 18th November, at the Bangkok Convention Center, Centara Grand Hotel. (In Thai)

Pornchai Mongkolvanich. (2009). Supporting and constraint factors of successful in co-operative education management in Thai universities. *Thai Journal of Cooperative Education, 1*(June), 19-38. (In Thai)

Prajak Ariyapokakul. (2008). *The factors affecting the policy implementation: Case study of free education for 15 years, 2009-2010.* (Unpublished master's thesis). Chulalongkorn University, Bangkok. (In Thai)

Prapatchot ngankham. (1994). *The role of public-private committee and the economic policy formulation.* (Unpublished master's thesis). Chulalongkorn University, Bangkok. (In Thai)

Pratchayanan Nilsuk, & Panita Wannapirun. (2013). Highly effective operation of managing dual vocational education: Case study of Ban Kai technical school. *Journal of Industrial Education, 4*(2), 148-153. (In Thai)

Pressman, J. L., & Wildavsky, A. (1973). *Implementation.* Berkeley: University of California Press.

Ratchanee Yampracha. (2001). *Factors accounting for the delay in the implementation of educational reform policy under the administration of Perime Minister Thaksin Shinnawatra.* (Unpublished master's thesis). Chulalongkorn University, Bangkok. (In Thai)

Ronnachit Prussakum. (2011). *An analysis of factors affecting the implementation of a knowledge management policy of secondary schools under the Office of the Basic Education Commission.* (Unpublished doctoral dissertation). Chulalongkorn University, Bangkok. (In Thai)

Ruangwit Ketsuwan. (2007). *Public policy.* Bangkok: Borpit Press. (In Thai)

Ruangwit Ketsuwan. (2008). *Policy implementation.* Bangkok: Borpit Press. (In Thai)

Ruangwit Posoongnern. (2006). *A follow-up study of the organization of the-higher vocational certificate curriculum B.E.2003 in a prototype project of technician production for industry, the vocational education commission.* (Unpublished master's thesis). Chulalongkorn University, Bangkok. (In Thai)

Rungroung Sukapirom. (2000). *An analysis of factors related to the educational policy implementation : A case study of the expansion of basic education policy.* (Unpublished doctoral dissertation). Chulalongkorn University, Bangkok. (In Thai)

Sabatier, P., & Mazmanian, D. (1980). The implementation of public policy: A framework of analysis. *Policy studies journal*, *8*(4), 538-560.

Sarasit Wichonkhajon. (2006). *Introduction to public policy.* Bangkok: Thanet Printing. (In Thai).

Sattahip Technical College. (2016). Sattahip *Technical College or in English called Thai-Austrian Technical College.* Retrieved from http://www.tatc.ac.th/?usid=20100887 (In Thai)

Sawas Udomchok. (2000). *Report on the vocational education reform and vocational training in the U.S.* Retrieved from http://www.onec.go.th/index.php/book/BookGroup/13 (In Thai)

Science-Based Technology Vocational College (Chonburi). (2015). *Science-based technology vocational college.* Retrieved from https://th-th.facebook.com/pages/Science-Based-Technology-Vocational-College-Chonburi/157097697669220 (In Thai)

The Secretariat of the House of Representatives. (2005). *Report of the joint committee on the vocational education act.* Bangkok: The Secretariat of the House of Representatives Press. (In Thai)

The Secretariat of the House of Representatives. (2016). *The analysis of public-private partnership (PPP) investment.* Bangkok: The Secretariat of the House of Representatives Press. (In Thai)

Secretariat of the Senate. (2007). *Draft vocational education act.* Retrieved from http://library.senate.go.th/document/mSubject/Ext58/58940_0001.PDF

Senate Committee on Education (2009). *Vocational education: Challenging problem for Thailand.* Bangkok: Office of the Secretariat of the House of Senates.

The Senate Committee on Education. (2011*). Summary of the meeting of the senate committee on education 15/2011*. Retrieved from http://library.senate.go.th/document/mSummaryM/Ext2/2678_0001.PDF

The Senate Committee on Education. (2013). *Thailand vocational education management.* Retrieved from http://library.senate.go.th/document/Ext6307/6307908_0001.PDF

The Senate Committee on Education. (2014a). *Summary of the conference on teacher and improving vocational teacher for 21st century.* Retrieved from http://library.senate.go.th/document/mSummaryM/Ext18/18145_0001.PDF (In Thai)

The Senate Committee on Education. (2014b). *Summary of the meeting of the senate committee on education 6/2013 on Thursday, 6 March. the problem of the student loan management.* Retrieved from http://library.senate.go.th/document/mSummaryM/Ext18/16145_0001.PDF (In Thai)

The Senate Standing Committee on Education. (2009). *Vocational education: challenging problem for Thai society.* Bangkok: The Secretariat of the Senate Publishing. (In Thai)

Sharma, R. (2009). *Education for sustainability in certificate and vocational education at a New Zealand polytechnic*. (Doctoral dissertation). Unitec New Zealand, Auckland.

Simpkin, T. (2011). *Theorising occupational decision making: A longitudinal study of hospitality training in schools*. (Doctoral dissertation). University of Tasmania, Tasmania.

Siriporn Thongkaew. (2010). *A study of the operational model of cooperative education in the Faculty of Technical Education, Rajamangala University of Technology Thanyaburi: mixed method research.* (Unpublished master's thesis). Chulalongkorn University, Bangkok. (In Thai)

Soliman, S. (2011). *Institutional theory and the policy problem of vocational education and training and its development: the Egyptian case* (Doctoral dissertation). Middlesex University, Middlesex.

Somchai Hiranwarodom, & Nutchatipong Uthong. (2009). A case study: The operation of cooperative education at the faculty of engineering, Rajamangala University of Technology Thanyaburi. *Thai Journal of Cooperative Education*, *1*(4), 75-86. (In Thai)

Sommai Parichat. (2015, September 11-17). *Thai views on Thailand*. *Matichon Weekly*, p. 34.

Sothitorn Mallikamas. & Pacharawalai Wongboonsin. (2013). *The development of human resource and the productivity for AEC: Vocational education*. In Pacharawalai Wongboonsin and group. Bangkok: Chulalongkorn University. (In Thai)

Standard and Poor. (S & P). (n.d.). *Meaning of PPPs.* Retrieved from https://ppp-certification.com/ppp-certification-guide/11-defining-ppps-purpose-ppp-certification-guide.

Streeck, W. (2012). *Skills and politics general and specific.* Retrieved from http://www.mpifg.de/pu/mpifg_dp/dp11-1.pdf

Stubbs, R. (2009). What ever happened to the East Asian Developmental State? The unfolding debate. *The Pacific Review*, *22*(1), 1-22.

Sumet Yamnun. (2004). *Cooperative education: A model to manage Education for economic stability.* Bangkok: National Defense College of Thailand. (In Thai)

Suphachai Yawaprapart. (2014). *Public policy.* Bangkok: Chulalongkorn University Press. (In Thai)

Supharp Palaphiboon. (2003). *Business participation on the management of dual vocational education in Phathumthani.* (Unpublished master's thesis). Srinakharinwirot University, *Phathumthani.* (In Thai)

Surachai Thamtaveekul, & Thawatchai Bawornjitrungruang. (2005). *A study of small and medium industrial factories' demand for technical vocational student and the effectiveness of vocational education institution in respond to this demand in Eastern Thailand.* Bangkok: Office of Higher Education Commission. (In Thai)

Surasak Thanuthong. (1996). *A study of problems of the operation of dual vocational education in electric skill: Case study of Nakorn Pathom technical college and Petchaburi technical college*. (Unpublished master's thesis). King Mongkut's Institute of Technology Ladkrabang, Bangkok. (In Thai).

Suriyon Boonserm. (2004). *The operation of dual vocational education of educational institution under northeastern institute of vocational education.* (Unpublished master's thesis). King Mongkut's University of Technology North Bangkok, Bangkok. (In Thai)

The Thai Chamber of Commerce. (2016). *The appointment of provincial and provincial cluster joint public-private committees.* Retrieved from http://rss.thaichamber.org/userfiles/file/%E0%B8%81%E0%B8%A3%tE0%B8%AD_%E0%8%B1%E0%B8%87%E0%B8%AB%E0%B8%A7%E0%B8%B1%E0%B8%94/Kro_committee.pdf (In Thai)

Thai Health Promotion Foundation. (2010). *Alternative educational system suitable for Thai people.* Bangkok: Pharppim. (In Thai).

Thai Post. (2010). *Founding new vocational education institution to bring about problem.* Retrieved from http://edunews.thaischool.in.th/413.html (In Thai)

Thailand Development Research Institute (TDRI). (2014). *TDRI report on the economic effect of the minimum wage and salary policy No. 101.* Bangkok: TDRI.

Thairath. (2011). *OCEC Board refuses sasitara.* Retrieved from http://www.charuaypontorranin.com/index.php?lay=show&ac=article&Id=538984460&Ntype=1 (In Thai)

Thanapan Laiprakorpsab. (2003). The elements of developmental state. *Journal of Public and Private Management, 2*, 5-32. (In Thai)

Thanin Srichompoo. (2014*). Developing the form of managing dual vocational education in the school under the office of the vocational education commission.* (Unpublished doctoral dissertation). Naresuan University, Pitsanulook. (In Thai)

Thanin Srichompoo, et al. (2014). Developing the form of managing dual vocational education in the school under the office of the vocational education commission. *Journal of Education Naresuan University. 16*(3), 120-131. (In Thai)

Thansettakij. (2016). *Expecting the increasing the labor demand to 38 million people in 2020, 36, no. 3,175 on 17-20 July*. Retrieved from http://www.thansettakij.com/2016/07/21/71638

Thipayarat Sipetchlueng. (2002*). Forms and strategies for establishing corporate university in Thailand.* (Unpublished doctoral dissertation). Chulalongkorn University, Bangkok. (In Thai)

Thirayuth Suwannachak. (2005). *The management of dual vocational education of industrial labor in Lampang*. (Unpublished master's thesis). Lampang Rajabhat University, Lampang. (In Thai)

Thongbai Sutcharee. (1993). *Implementing the teacher's college policy: A case study of Southern Northeast.* (Unpublished doctoral dissertation). National Institute of Development Administration, Bangkok. (In Thai)

Unwin, L. W. (1994). *The role of employers in vocational education and training: partners or passive recipients?* (Doctoral dissertation). University of Warwick, Warwick.

Van Lieshout, H. A. M. (2007). *Different hands: Markets for intermediate skills in Germany, the U.S. and the Netherlands.* (Doctoral dissertation). Utrecht University, Amsterdam.

Van Meter, D. S., & Van Horn, C. E. (1975). The policy implementation process: A conceptual framework. *Administration & Society, 6*(4), 445-488.

Vocational Education and Skill Formation in Australia. (n.d.). *Study in Australia.* Retrieved from http://www.aussiecenter.org/index.php/study-in-australia

The Vocational Education Commission. (2014). *Report of the vocational education commission 11/2014.* Retrieved from from:http://www.vec.go.th/Portals/48/secret/2014.pdf

The Vocational Education, Education Commissioner and Senate. (2013). *Incentives for vocational education of Thai youth.* Retrieved from http://www.senate.go.th/w3c/senate/comm.php?url=view&comm_id=59&content_id=3309 (In Thai)

Warapan Noisuwan. (1996). *A study of the cooperation between vocational institutions and industrial factories in training technical skill process in Thailand.* Bangkok: Mnistry of Education. (In Thai)

Weerasak Chotkarnkul. (2003). *Problems in managing dual vocational education of the educational institution under technical college division, vocational education department area 9.* (Unpublished master's thesis). Sakon Nakhon Rajabhat University, Sakon Nakhon. (In Thai)

Weerawat Wongdontree. (2013). Values and skills: The problems of Thai vocational education: The dual vocational education as solution. *Econ-news, 24* (September), 12-16. (In Thai)

Wisa Poonsirirat. (1990). *State role on private groups in the joint public and private consultative committee (JPPCC).* (Unpublished master's thesis). Chulalongkorn University, Bangkok. (In Thai)

Wood, G., & Fryas, J. G. (2006). The institutional basis of economic failure: anatomy of the segmented business system. *Socio-Economic Review, 4*(2), 239-277.

Woradej Chanthornsorn. (1984). Policy implementation: Models and values. *NIDA Development Journal, 24*(October), 535-554. (In Thai)

Woradej Chanthornsorn. (1985). Policy implementation: Lessons and strategies from past failures. *NIDA Development Journal, 25*(10), 499-503. (In Thai)

Woradej Chanthornsorn. (1999). *Developing one stop Service model.* Bangkok: National Institute of Development Administration. (In Thai)

Woradej Chanthornsorn. (2009). *Public policy implementation* (4th ed.). Bangkok: Prickwarn Graphic. (In Thai)

Worawit Sritrakoon. (1997). *Opinions of businesses participating the dual vocational education management in automobile with the Northeastern Technical college.* (Unpublished master's thesis). King Mongkut's Institute of Technology Ladkrabang, Bangkok. (In Thai)

Yaravee Phupuanngthong. (2001). *The key success factors for Thailand higher education reform.* (Unpublished master's thesis). Chulalongkorn University, Bangkok. (In Thai)

Young, R. C. (1973). *Manpower demand: Information guidelines for educational, vocational education, and manpower planning.* Columbus', OH: The Center for Vocational and Technical Education, The Ohio State University.

APPENDICES

APPENDIX A

KEY INFORMANTS AND QUESTIONS

The researcher does both formal and non-formal interviews with key informants who are representatives from public sector, private sector and school. There are three groups of them. The first two groups of key informants will provide deep information from different dimensions of inner perspectives. Examples of key informants in these two groups are experts and academics of economy industry and education.

First Group: Key stakeholders both in the policy and implementation level

	Entity	Importance of each Role
Public sector (Policy level)	1) the Office of Vocational Education Commission (VEC.)	Monitoring the vocational education administration and the production of craftsman, technician and technological engineer
	2) King Mongkut's University of Technology North Bangkok	Assigned to study on the vocational and technological manpower planning
Public sector (Implementation level)	1) Maptaphut Technical College 2) BanKhai Technical College 3) Rayong Technical College 4) Sattahip Technical College 5) Automotive Industry Technical College 6) Bangpakong Industrial and Community College 7) Sakonnakorn Technical College	Vocational institutions which run the DVT system with the private sector
Private sector (Policy level)	1) Human Resource and Social Development Program, TDRI	Study on the labour demand situation, problems and recommendation of labour demand,

	Entity	Importance of each Role
		and the development of industrial technician production
Private sector (Implementation level)	1) IRPC Technological College	Produce manpower for their own industry group.
	2) E-San Technological College 3) Metro Technological College	Vocational institutions which run the DVT system with the private sector

Second Group: Key Stakeholders in Labour Demand

	Entity	Importance of each Role
Public sector	1) Department of Skill Development, the Ministry of Labor 2) Department of Employment, the Ministry of Labor 3) the Office of Industrial Economic, the Ministry of Industry 4) Department of Industrial Promotion, the Ministry of Industry	Collecting information on the labour demand, skill shortage and provide the industrial development strategy planning
Private sector	1) Toyota (Thailand) Co. Ltd. 2) Honda (Thailand) Co. Ltd. 3) SCG Cementi-Building Materials Co.Ltd. 4) Suksapat Foundation	Voice out their labour demand, skill shortage and cooperate in the industrial technician production.

Third Group: Experts and academics in economy section, industry section and education section follow and notice the development and changing movement of production policy and workforce including workforce demand situation and labor market demand such as former high commissioners, researchers or lecturers. The researcher interviews those experts and academics for different perspectives which may provide a clearer picture.

Furthermore, the researcher will have a non-formal interview with other key informants such as Representatives of Professional Association and industrial associations, for example, Dr. Chakrapan Promnimithra, Executive Director of Association of Private Higher Education Institutions of Thailand, Dr. Chatchai Norasethaporn, and Executive Director of Executive Committee in Human Resources Central Group Co., Ltd. For interviewing key informants, the research will prepare specific questions or issues. The interview takes 45 minutes to one hour and a half. The details are as follows:

APPENDIX B

THE INTERVIEW ISSUES

Purposes	Interview Issues
1) To study and analyze roles of the VEC. in producing industrial technicians	1) Why does not the production of industrial technicians meet market demands both quantity and quality? 2) Does the organization of district vocational education schools in the first district affect an increase of students in the schools? 3) The organization of vocational education schools has been questioned by many sectors about the quality of the management and the problem of oversupply of bachelor's degree as in the case of Rajabhat. What measures should the VEC. use to handle the problem? 4) Can the organization of the Office of National Education Standards and Quality Assessment handle the problem of the quality of industrial technicians? Will the organization of model vocational education schools as in the case of Rajamangala Universities of Technology previously a famous and acceptable vocational education school of industry affect the solution of labor shortage? And How? 5) What factors made the industrial sector open schools for producing industrial technicians? and Will it affect the student's decision to enter the schools? and How? How should the government sector handle this situation? 6) What pattern of educational management should vocational certificate graduates have for choosing the right profession? 7) Is it possible for the VEC. to support the policy of the VEC. in producing industrial techniciansduals system 100% especially in the schools outside the industrial estate?
2) To study and analyze the pattern of the cooperation between the VEC and the entrepreneurs in the production of technicians	1) How is the cooperation between public sector and private sector in vocational education management especially duals industrial system today? 2) What will affect the production industry the sector if vocational education schools organize bachelor's degree of

Purposes	Interview Issues
	operation to attract more students to study in vocational education? 3) What are the desirable Skills/Capacities of graduates of industrial technicians? 4) Can the organization of the Office of National Education Standards and Quality Assessment be a solution to the problem? 5) What are the factors to drive the industrial sector to open its own schools to produce industrial technicians? Will it affect the decision to study of the students and How? How should the government be involved in this issue? 6) How are the relations between vocational education reform and the strategy of industrial development of the country? 7) Is it possible for the VEC. to support the policy of duals system 100% especially in the schools outside the industrial estate?
3) To study and analyze the cooperation between government agencies such as the Ministry of Education, the Ministry of Labor, the Ministry of Industry including the cooperation between public sector and private sector in determining the strategy of industrial technicians production	1) What patterns and process should be taken in vocational education to meet the establishment demands and focus on professions of graduates? 2) Can a joint committee of government and private sector help solving labor shortage problem?

APPENDIX C

LIST OF KEY INFORMANTS

Public Secrtor

Dr. Chaiyapruk Sareruk	Secretariat, the Office of the Vocational Education Commission, the Ministry of Education
Mr. Somsak Chanruangthong	Inspector General, the Ministry of Industry
Mr. Kobchai Sangsitsawat	Deputy Director, Department of Industrial Promotion, the Ministry of Industry
Mr. Siriruj Junkarat	Vice Director, the Office of Industrial Economic, the Ministry of Industry
Mr. Singhadej Chuamnat	Deputy Director, Department of Skill Development, the Ministry of Labor
Mrs. Eamporn Sojiponkul	Director, Skill Development Promotion Division, Department of Skill Development, the Ministry of Labor
Mr. Tanit Numnoi	Deputy Director, Department of Employment, the Ministry of Labor
Mr. Prachakom Chantonchit	Director, Bureau of Vocational Education Standards and Qualification, the Office of the Vocational Education Commission

Private Sector

Mr. Sakchai Uanjittikul	President, Small and Medium Industrial Institute, The Federation of Thai Industries
Mr. Sittipong Kaimuk	Purchasing Manager, Division of domestic autopart, Toyota (Thailand) Co. Ltd.
Mr. Pairat Paendueng	Manager, Division of administration, Honda (Thailand) Co. Ltd.
Mrs. Pornchanok Chankong	DVT Manager Learning and Development/ HR Office – Domestic Market, SCG Cement-Building Materials Co.Ltd.

Experts/Scholar

Mr. Paron Issarasana	Director, Darunsikkhalai School President, Suksapattana foundation and the Lighthouse Project Counselor, Vocational Chemical Engineering Practice College (V-ChEPC)
Dr. Mata Taskon	Electronic Engineering. Faculty of Industry and Technology Rajamangala University of Technology Isan Sakonnakhon Campus.
Prof. Teerawut Boonsopon	Dean, King Mongkut's University of Technology North Bangkok
Prof. Sompong Jitpradap	Faculty of Education, Chulalongkorn University
Prof. Anek Laotammatus	Dean, College of Government Rangsit University Author, Business associations and the new political economy of Thailand
Assoc. Prof. Yongyut Charaemwong	Director, Human Resource and Social Development Program, TDRI
Assoc. Prof. Kitti Limsakul	Faculty of Economics, Chulalongkorn University Counselor, Mr. Jaturon Chaisang the former Minister of the Ministry of Education

Public Vocational Colleges

Mr. Kittipong Ruengkon	DVT coordinator, Sakonnakorn Technical College
Mr. Surapong Abdullao	DVT coordinator, Bang Pa Kong Industrial and Community College
Mr. Kamon Chumcharan	Director, Ban Khai Technical College
Mr. Yuttapan Kotpan	Instructor and coordinator, the V-ChEPC, Maptaphut Technical College
Mr. Damrong Jintasirikul	Coordinator in the SCG Model, Rayong Technical College
Mr. Vatcharin Siripanit	Director, Sattahip Technical College
Mr. Montri Haruensong	Director, Automotive Industrial Technical College

Private Vocational Colleges

Mr. Rungniran Taingtum	Director, IRPC Technological College
Mr. Marut Sisintorn	Director, Metro Technological College
Mr. Anupong Mukkararuk	Director, E-San Technological College

BIOGRAPHY

NAME	Miss Bulanchai Udomariyasap
ACADEMIC BACKGROUND	Bachelor of Arts (Philosophy, Politics, and Economics: PPE) Rangsit University International College 1998 Master of Political Science (Government) Chulalongkorn University 2003
WORK EXPERIENCE	2005 - Researcher (Freelance)