# การศึกษาช่องว่างสมรรถนะของผู้ที่สำเร็จการศึกษาจากหลักสูตรก่อสร้างอาคาร ระดับประกาศนียบัตรวิชาชีพ และความต้องการของสถานประกอบการก่อสร้าง ในประเทศลาว

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**บทคัดย่อ**

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาช่องว่างสมรรถนะความต้องการของผู้ประกอบการก่อสร้าง และการศึกษาช่องว่างสมรรถนะของผู้ที่สำเร็จการศึกษาจากหลักสูตรก่อสร้างอาคารที่พักอาศัยระดับประกาศนียบัตรวิชาชีพ และความต้องการของสถานประกอบการก่อสร้างในประเทศลาว ประชากรที่ใช้ในการวิจัยได้แก่สถานประกอบการด้านการก่อสร้างอาคารทั้งประเทศลาวจำนวน 2,835 แห่ง ซึ่งบางแห่งมีศิษย์เก่าเป็นเจ้าของด้วย ใช้การสุ่มตัวอย่างแบบแบ่งเป็นภาคเพื่อรวบรวมข้อมูลจากกลุ่มตัวอย่างภาคเหนือ ภาคกลาง และภาคใต้ ได้จำนวนกลุ่มตัวอย่างของสถานประกอบการทั่วไป 731 แห่ง และของศิษย์เก่า 41 แห่ง รวม 114 แห่ง เครื่องมือที่ใช้ในการเก็บข้อมูลคือแบบสอบถามสมรรถนะของผู้จบการศึกษา สถิติที่ใช้ในการวิเคราะห์ได้แก่ ความถี่ ร้อยละ ค่าเฉลี่ย และส่วนเบี่ยงเบนมาตรฐาน ประโยชน์ของการวิจัยครั้งนี้คือการได้รับข้อมูลและแนวทางในการพัฒนาหลักสูตรตามความต้องการของสถาบันพัฒนาวิชาชีพ และได้ข้อมูลสำหรับครูผู้ที่สอนสาขาก่อสร้างเพื่อใช้ในการเรียนการสอน ผู้ประกอบการก่อสร้างจะได้รับนักศึกษาที่จบตามความต้องการ ผลการวิจัยพบว่า 1) ความต้องการด้านสมรรถนะของสถานประกอบการด้านการก่อสร้างอาคารที่พักอาศัยด้านทัศนคติอยู่ในระดับปานกลาง โดยเฉพาะอย่างยิ่งผลการปฏิบัติงาน ได้แก่ ตรงต่อเวลา นวัตกรรม และความรับผิดชอบหน้างานในภาคสนามเกี่ยวกับการก่อสร้างอาคารที่พักอาศัย สำหรับด้านความรู้และทักษะมีความต้องการน้อยที่สุด และ 2) ช่องว่างสมรรถนะของผู้ที่สำเร็จการศึกษาจากหลักสูตรก่อสร้างอาคารที่พักอาศัยระดับประกาศนียบัตรวิชาชีพ และความต้องการของสถานประกอบการก่อสร้างในประเทศลาว มีช่องว่างทั้ง 3 ด้าน คือ ด้านความรู้ ด้านความสามารถ และทางด้านทักษะ

**คำสำคัญ :** ช่องว่างความสมรรถนะ นักศึกษาจบการศึกษาประกาศนียบัตรวิชาชีพ การก่อสร้าง

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# The Study of Competency Gap of Graduated Students in Vocational Diploma Curriculum of Building Construction and the Construction Enterprises' Requirements in Laos

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## Abstract

This research aimed to study the competency of the construction enterprises's requirements and the study of competency gap of graduated students in vocational diploma curriculum of building construction and the construction enterprises's requirements in Laos. The populations were 2,835 building enterprises from Laos which some of them there were the Alumni as the owner. The stratified random sampling technique was used to collect data from the northern, central, and southern parts. There were 114 sample that compose of 73 enterprises and 41 Alumni. Used in this research were 114 sampling enterprises. The study tool was the competency questionnaire. The statistics frequency, percentage, mean and standard deviation. The benefits of this research were to obtain information and guideline for curriculum development according to the demands of competency for Vocational Education Development Institute (VEDI), and to obtain information for building construction's teachers to manage teaching and learning. The enterprises also get the graduate's students who are in accordance with their requirements in Laos. The results showed that: 1) the attitude of the competency requirements of the building construction enterprises was moderate. In particular, work performance, such as punctuality, innovative, responsibility, practical, and field handing, for knowledge and skills in building construction were the least requirements, and 2) the study of competency gap of graduated students in vocational diploma curriculum of building construction and the construction enterprises's requirements in Laos revealed that there were gaps in all three parts, attitude abilities, knowledge abilities and skill abilities.

**Keywords :** Competency Gap, Graduate Students, Vocational Diploma, Construction

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## 1. Introduction

Education is a key role in the modern economic and social development process. Sustainable economic growth in developed economies requires a population of workers, entrepreneurs, and managers with the high level of schooling. Also, the education is an important part of developing worker productivity in all industrialized countries (Derek, 2010) to continuously implement the new changes of the human resources development party to be in line with the national development master plan, and the country's economic structure as well as the need for integration with the Asian Economic Community (AEC). This is the continuation of the construction of economic infrastructure technological and personnel technicians. (VEDI, 2016). In addition, the Lao government remains aware of the development of many skills, especially construction skill work to cope with the new developments because skill development for labor is very important policy for the developing countries, particularly the development to be sustainable skilled-labor in Asian countries. To keep up with the new changes of technology coming into Laos, as we know the project of the railway from China into Laos needs more construction skill labor to support, also competencies of construction labor skill are important to the new change development (Trinder, 2008). Vocational Education or Technical and Vocational Education and Training (TVET) system in Laos is responsible for today's career fields. There are differences in the curriculum and teaching methods depending on the educational philosophy of the organization under the Ministry of Education and Sport. There are 3 systems in vocational education, Formal vocational education, Non-formal vocational education and integrated vocational education. The (TVET) is divided into three levels: primary or first level (at upper secondary level), middle level and high level (at post - secondary level) (MoES, 2013). The quality of vocational education is important for the enterprise because quality refers to standards and the satisfaction of the service. If vocational education is lacking, the professional standard skill will be unsuccessful. In order to solve the problems of unqualified labor, it is recommended that the Ministry of Labor and Social Welfare (MoLSW) works closely with enterprises. (UNESCO, 2013). Anyway, many skill labor, particularly in the building construction, working in building construction enterprises, almost all of them are from other countries such as China and Vietnam, and there was a lot criticism from the social. Vocational education system in Laos is currently presenting that there is still a cumulative problem that they've been hinders to the development of manpower in the industrial sector of the country and the problematic part. Because the labor production of generation in the vocational education system is still low quality. They cannot work in real situation because the content of the curriculum is not in line with the requirements of the enterprises. The curriculum has been used for a long time since 2011 until 2017. However, there has not yet been evaluated and improved (Kaluna, 2016). Construction curriculum is also one of the education aspects that is important to the construction industry. However the vocational education system and the curriculum are inappropriate, also the media and facilities for teaching and learning particularly of modern technology and inadequate in both quantity and quality (UN, 2008). Therefore, if we know the requirement of the building enterprise, and the competency gap of graduated student, we can improve the curriculum and the teaching and learning. In the aspect of inappropriateness with the curriculum, there is a lot criticize from social, but the problem has not been solve seriously. Since employers, labor users and teachers know that skill labor from vocational education do not respond to

labor market demand, so it can be concluded that the teaching and learning in vocational education is inappropriate with the labor market demand. From the background and the significance of the problem, the researcher is interested to investigate the competency gap arising from educational institutions and enterprise. It is the intention of the researcher to fulfill the construction curriculum competency gap, create confidence for those who complete with vocational education. In addition, the enterprise will get quality labor skill, have confidence in task assignments for accomplish the objectives and goals

**2. Objectives**

The main goals of this study were as follows:

2.1 To study the competency the building construction enterprises's requirements in Laos.

2.2 To the study of competency gap of graduated students in vocational diploma curriculum of building construction and the construction enterprises's requirements in Laos.

**3. Related Literature**

Concepts and related research are as follows:

3.1 Theories of competency

Job capacity manager (competency management) is a management tool that many organizations have applied to their competitive advantages, the development of personnel within the organization to provide skills knowledge, ability and other necessary for the position. There are many scholars and author who give the meaning of the competency as in the following:

Competency refers to the mixture of knowledge, skills, abilities, motivation, beliefs, values, and attitudes (Mor, et al, 1995). Competency means the result of motivation. Personal qualities, attitudes, or values that have the knowledge or skills of individualized behaviors that can be measured, and show the difference of the best performers. (Armstrong, 2006). Competency refers to a written description of the character traits, and personal skills used for work purposes (Wright, Dunford & Snell, 2001). Competency refers to the distinct characteristics of each person, which is associated with excellent work, or effectiveness in a certain job (Dubois & Roth well, 2004). It can be seen that many scholars and the author gives the meaning of the competency according to their concept. So the researcher define the competency as referring to a group of related knowledge, skills and attributes the impact on the main task of a job related to the performance of the job. It can be measured against acceptable standards and can be reinforced through training.

3.2 Construction curriculum

3.2.1 General principle

The vocational technician diploma curriculum level 4, was developed by the Vocational Education Development Institute (VEDI). It was joined with Vocational Education School and enterprise for creating and developing technician skill labor, through consideration and approval from the Department of Vocational Education under the Ministry of Education and Sports, according to the agreement of the Ministry of Education and Sports as below.

3.2.2 Objectives and philosophy of the curriculum

The objectives of the curriculum are to 1) provide knowledge, skill and attitude according the labor market demand, 2) create the idea to solve the problem and can work on specific technical graduates, 3) teach students to have moral and ethics in the profession and have good personality and good human relations, and 4) can work with responsibilities

3.2.3 Philosophy

"Excellent learning features academic emphasis communicate progress develop the nation"

3.2.4 Curriculum name:

Curriculum of Technician Construction Diploma Level 2.

3.2.5 Diploma name:

Technician Diploma Level 2

3.2.6 Skill level

At this level, student should have the performance in brick lay, plastering , angular, concrete, floor tile, color, create form, ceiling, Install frog ring and doorbell of window and door, create wood and steel roof correctly, be able to use machines in construction and wood correctly. They can plan, estimate in construction and repairing. Construction technician of government staff and private, assistant to the executive office to perform tasks related to planning, construction and repair budget, preparation of documents for construction bidding and summary of other construction and repair. Moreover, they can communicate in business as well as use English for basic business coordination, with ethics in construction, integrity, honesty and transparency.

3.2.7 Qualifications and Conditions of Applicants! Education and Gender. Both male and female with the age less than 17 to 45 years with high school graduate or equivalent, graduated from Diploma level 3 or in related fields, complete training in relevant fields and experience specific subjects. It has a level calibration and consider credit by attitude.

3.2.8 Examination location

The institute must consider the number of staff to control the examination.

3.2.9 Assessment of learning

Only students who have completed this curriculum will receive a diploma degree.

3.3 Related Research

Vongsingthong (2009, p : 3-4) studied The Conformity of Thai ICT Graduates and Demand of Entrepreneurs. He found that, it was important for the entrepreneur, especially responsibility Loyalty to the organization. This was partly due to the fact that society was entering the globalized era, with the flow of materialism and consumerism. At the same time, cultivating a spiritual culture made students more important. According to the results of the interview, many entrepreneurs had a consistent concept that “graduates currently lack loyalty to the organization and never think for salary. What to do with the organization? What is the thing to get from organizing? “It is a difficult one for the school. You need to cultivate in just 4 years.

Upayokin, et al (2015 p : 44) Study of labor demand and skill development in the Mekong sub region, this study aims to investigate and analyze the situation of human and skill labor development in order to serve economic development in Greater Mekong Sub-Region. The result shows significant differences in the demand for labor’s skills development, which can be categorized into three distinguished groups as follows. First, the group of countries which have established schools that serves the development of basic labor’s skill but still require management skills especially in service industry such as Thailand and People’s Republic of China. These countries provide high employment cost and currently depended on foreign workforce from nearby countries. Second, the group of counties that still need basic skill development such as Union of Myanmar, Laos People’s Democratic Republic and Cambodia which have significantly lower employment cost. The third group needs skill development which is mixed of two groups mentioned above such as Vietnam.

## 4. Research Methodology

4.1 The population used in this research were enterprises owner, management, supervisor technician, advance skill, and skill worker in building construction enterprises of 1,815 enterprises and 1,020 alumni totally 2,835 people. To cover the sample of 3 parts, the researcher used stratify

sampling, to select the sample group of 73 enterprises and 41 alumni overall 114 people of building construction enterprises by using formula of (Bartlett, Kotrlik, & Higgins, 2001).

4.2 Research tools

Tools used in the research was questionnaire. The researcher created by studying problems and objectives of the research, analyzing the curriculum, interviewing with construction teachers to define the purpose of the survey questions. Moreover the researcher analyzed, the building construction work, studied the category and characteristics of the questionnaire and determined the format of the questionnaire using valuation by 5 levels rating scale. The researcher revised questionnaire, and then present it to the expert from the educator who had building experiences to check the content of the question and content validity by Index of Item Objective Congruence (IOC).

All of the topics were coherence with the purpose of objectives the IOC during .0.50 - 1.00. The questionnaire was tried out by 30 enterprises, to test the reliability by Alpha Coefficient of Cronbach's coefficient Alpha. The reliability was 0.93 the average showed that the questionnaire was highly reliable and could be used to collect data.

4.3 Data collection

To collect the data, the researcher coordinated with the building construction enterprises by telephone, then sent and received the complete questionnaire by mail, electronic mail, and collect data manually.

4.4 Data Analysis

In the analysis, of the opinions of the building construction enterprises, the data obtained from questionnaires. The researcher analyzed the data from each questionnaire by computer program in the following ways.

4.4.1 Analyzed general information of building construction enterprises by percentage.

4.4.2 Investigated the competency gap of graduated students in vocational diploma curriculum of building construction and the construction enterprises's requirements. Analysis the meaning and standard deviation was conducted using the formula, (Stockmann, 2011)

## 5. Research results

The results were as follows.

5.1 General information of building construction enterprises

Most of the samples were from the central of Laos, and building construction enterprises mostly employ less than 20 respondents. Most of the staffs of building construction enterprises were management /supervisor, and the working experience of the staffs of building construction enterprise are during 1 - 10 years, and the age 10 years or more.

5.2 From the research objectives, the results were as follows: 1) the study the competency the building construction enterprises's requirements in attitude of the building construction enterprises were moderate. In particular, work performance, such as punctuality, innovative, responsibility, practical, and field handing, gained the highest requirement, in the building construction enterprises, while knowledge and skills in building construction were the least requirements, and 2) The competency gap of graduated students in vocational diploma curriculum of building construction and the construction enterprises's requirements in Laos show the gap within three parts on attitude abilities, knowledge abilities and skill abilities.

**Table 1** The summary value of mean and standard deviation of competency of the building construction enterprises's requirements in attitude, knowledge abilities, and skill abilities.

| Evaluation topics | Enterprises's Requirements | | Meaning |
|---|---|---|---|
| | $\overline{X}$ | S.D | |
| Attitude | 3.32 | 0.91 | moderation |
| Knowledge Ability | 2.14 | .664 | less needs |
| Skill Ability | 2.82 | 0.69 | less needs |
| Total | 2.76 | 0.75 | less needs |

From table 1 it was found that the result of competency the building construction enterprises's requirements show that the overall $\overline{X}$=2.76, in attitude was moderation $\overline{X}$=3.32, in knowledge abilities was less needs $\overline{X}$=2.14, in skill ability was less needs $\overline{X}$=2.82.

**Table 2** The summary value result of mean and standard deviation of competency gap of graduated students in vocational diploma curriculum of building construction and the construction enterprises's requirements in attitude, knowledge abilities, and skill abilities.

| Evaluation topics | Situation from School | | Enterprises' Requirements | | Different Mean (Gap) |
|---|---|---|---|---|---|
| | $\overline{X}$ | S.D | $\overline{X}$ | S.D | |
| Attitude | 2.70 | 0.87 | 3.32 | 0.91 | - 0.62 |
| Knowledge Ability | 2.23 | 0.73 | 2.51 | 0.75 | - 0.28 |
| Skill Ability | 2.72 | 0.73 | 2.82 | 0.69 | - 0.09 |
| Total | 2.55 | 0.78 | 2.89 | 0.79 | - 0.34 |

Table 2 shows the result of competency gap of graduated students in vocational diploma curriculum of building construction and the construction enterprises's requirements of the overall $\overline{X}$=2.55, in attitude was $\overline{X}$=2.70, in knowledge ability was $\overline{X}$=2.23, and in skill ability was $\overline{X}$=2.72. This every topic reveals the gap.

## 6. Discussion

From the analysis of opinions on the competency, the building construction enterprises's requirements with the construction vocational graduated student, in overall, it was found that $\overline{X}$=2.76, one of the problems might be to teach activities in the vocational construction curriculum. This is a necessary development. The gap arises from the content of construction curriculum that is inappropriate with the requirement of the building construction enterprise's needs. It coherences with the research Vongsingthong (2009, p : 3-4) study on The Conformity of Thai ICT Graduates and Demand of Entrepreneurs finding that, it is important for the entrepreneur. Especially the responsibility Loyalty to the organization, this aspect requires development urgently. This is partly due to the fact that society is entering the globalized era. With the flow of materialism and consumerism.

At the same time, cultivating a spiritual culture made students more important. According to the results of the interview, many entrepreneurs had a consistent concept that "graduates currently lack loyalty to the organization and never think for salary. What to do with the organization? What is the thing to get from organizing? "It is a difficult one for the school. You need to cultivate in just 4 years.

When considering that the competency requirements of building construction enterprises mostly are moral and ethics. Upayokin (2015 p : 44) It support the study of labor demand and skill development in the Mekong sub region. This study aims to study and analyze the situation of human and skill labor development in order to serve economic development in Greater Mekong Sub-Region. The result shows significant differences in the demand for labor's skills development, which can be categorized into three distinguished groups as follows. First, the group of countries which have established schools that serves the development of basic labor's skill but still require management skills especially in service industry such as Thailand and People's Republic of China, these countries provide high employment cost and currently depended on foreign workforce from nearby countries. Second, the group of counties that still need of basic skill development such as Union of Myanmar, Laos, People's Democratic Republic and Cambodia which has significantly lower employment cost. The third group needs skill development which is mixed of two groups mentioned above such as Vietnam.

From the analysis of opinions, the competency gap of graduated students in vocational diploma curriculum of building construction and the construction enterprises's requirements, overall found that gap = - 0.34. The gap consisted of three items of the questionnaire gaps which may be caused by construction curriculum that does not have an assessment according to the needs of the labor market. Appropriate with the research, CIVE (2009 p : 5-7) the study in the gap of the Vocational Diploma Curriculum, year 2003 in Mechanical field of Autos-Mechanical Technology Trade between the real practical competencies for the needs of Autos-Mechanical Industrial Workplace. The purpose of this research was to study the gap of the competency of Vocational Diploma Curriculum, year 2003 in the Mechanical field of Autos-Mechanical Technology trade between the competency for the requirement of the Autos-Mechanical Industry and to take the data of the gap of the competency to improve the subjects of Vocational Diploma Curriculum, year 2003 in the Mechanical field of Autos - Mechanical Technology trade. The findings were presented that; 1) Knowledge increased by new technologies from other sources, such as; Internet, seminar documents, manufacturer documents, calculating the correct time and service cost along the standard of the workplace, the study of basic unit in various systems, studying the property of the pure mass, ideal gas status and the rule of the temperature in Ponlasake scale. 2) Skills increased by the skills of the balanced calculating of the driving automobile, the competencies calculating, the value of lobe rate, the efficiency of the heat from the combustion internal gasoline engine, the calculating of the circle process and the basic reverse cycle. It was increased by the checking, investigating the problems and the reasons of using individual, special, electrical and manual tools, checking post repairing and correcting for the standard competencies of the manufacturers in a limited time, analyzing the result of the fuel and competencies of the autos experientment, analyzing the problem of the pollution from the internal combustion of the gasoline engine by adapting the knowledge of the principle for the autos and the result from the suitable calculating. 3) Working habit was fostered by the fineness and caution, analyzing the result of the reason and data

from correct procedure in working, working in safety by 5 S activity and conservation, the environment for working area in ISO 14001 standard.

## 7. Conclusion

General information of building construction enterprises, most of the samples are in the central region, and building construction enterprises mostly employ less than 20 respondents. Most staffs of building construction enterprises were management /supervisor, with the experience in working staff of building construction enterprise, during 1-10 years,

From the research result on the study competency gap of graduated students in vocational diploma curriculum of building construction and the construction enterprises's requirements with the findings can be conducted from the objectives 1) the attitude and the competency requirements of the building construction enterprises were moderate. In particular, work performance, such as punctuality, innovative, responsibility, practical, and field handing, gained the highest requirement. In the building construction, knowledge and skills in building construction were the least requirements. 2) The competency gap of graduated students in vocational diploma curriculum of building construction and the construction enterprises's requirements in Laos show that the gaps within are three parts on attitude abilities, knowledge abilities and skill abilities.

## 8. Recommendation

8.1 Recommendations from this research

8.1.1 The result of research should be information and guideline for curriculum development according to the demands of competency for Vocational Education Development Institute (VEDI) in Laos

8.1.2 The curriculum should be assessed by the relevant sector to know of teaching activities and determine the quality of teaching and learning in that curriculum.

8.1.3 The (VEDI) should use this information an appropriate teaching and learning approach for teachers who are teaching in the field of construction in technical and vocational school according to the requirements of construction enterprises in Laos

8.2 Recommendations to future research

8.2.1 Should be to study competency gap of vocational diploma curriculum in the field of construction and the requirements of construction enterprises in Laos

8.2.2 To study training need assessment of building construction teacher

8.2.3 Develop construction curriculum model, according to the analysis.

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