The Competency Problems of Lao Civil Engineers in Lao PDR

ปัญหาสมรรถนะของวิศวกรโยธาใน สปป.ลาว

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ABSTRACT

The objective of this research paper aims to find out the competency problems of Lao civil engineers in Lao PDR. This research is survey research. Data was collected by questionnaire technique and random sampling method from a total number of 169 civil engineers working at both public and private sectors. Data was analyzed by using descriptive statistic and severity index. The finding demonstrates the key competency problems divided into three groups: 1) managerial knowledge and skill, 2) technical knowledge and skill, and 3) attribute problems. For the contribution to practice of this research, the finding discovers the key competency problems of Lao civil engineers considering as the baseline data to improve the competency of Lao civil engineers for both individual level represented by civil engineers, and organizational level represented by construction firms, education institutes, professional engineering institutions, administrative organizations, especially Ministry of Public Work and Transport.

บทคัดย่อ

วัตถุประสงค์การวิจัย เพื่อศึกษาปัญหาสมรรถนะของวิศวกรโยธาใน สปป.ลาว การวิจัยในครั้งนี้ใช้ระเบียบวิธีวิจัยเชิงสำรวจ เก็บรวบรวมข้อมูลด้วยแบบสอบถาม จำนวน 169 ตัวอย่าง จากภาครัฐและภาคเอกชน ด้วยเทคนิคการสุ่มตัวอย่างแบบง่าย (Random sampling) การวิเคราะห์ข้อมูลใช้สถิติพรรณนา และ ค่าดัชนีความรุนแรง ผลการศึกษาพบว่าปัญหาสมรรถนะของวิศวกรโยธาใน สปป.ลาว แบ่งออกเป็น 3 กลุ่ม คือ (1) ความรู้และทักษะด้านเทคนิค (2) ความรู้และทักษะด้านการจัดการ (3) ลักษณะเฉพาะความเป็นวิศวกร ผลจากการศึกษาจากการวิจัยนี้ ถือว่าเป็นการค้นพบปัญหา ของสมรรถนะของวิศวกรลาว และสามารถใช้เป็นฐานข้อมูลในการพัฒนาสมรรถนะของวิศวกรลาว ทั้งในระดับบุคคล หมายถึงวิศวกรโยธา และในระดับหน่วยงาน ซึ่งหมายถึงสถาบันการศึกษา องค์กรวิชาชีพ หน่วยงานภาครัฐ โดยเฉพาะกระทรวงโยธาธิการและขนส่ง สปป.ลาว

Key Words: Competency, Lao civil engineers, Competency problems

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Introduction

The construction industry build and provide infrastructure for other economic sectors, such as energy, tourism, agriculture manufacturing and etc on which purpose to improve living standards of human being (Budiwibowo et al., 2009). Nevertheless, due to the growing dramatically over the last decade of construction industry, the appropriate management, technology, experience, knowledge have not been provided. Thus, there are many problems affecting the work performance causing low engineering quality which are essential for the successful undertaking of construction project (Yihua, Tuo, 2011). Typically the construction project usually spans several years and goes through many phases, therefore the failures and errors in the construction are indeed occurring over all the diverse steps of the construction process (Dagbjartsdóttir, 2012). For this reason, the performance of each phase will affect the quality of the project (Al-tayeb, 2008). Therefore, man factor is one of the significant factors affecting the engineering quality because the construction is human-centered production activities (Yinhua & Tuo, 2011). Many researches support that the staff capability could impact the project success or failure. Consequently, the competency problems of staff should be identified and prepared in order to ensure the delivery of work performance or product (Palanutsook and Peansupap, 2013). Therefore, the competency problems of civil engineers should be studied and explored. Moreover, one of the core elements of AEC liberalization is free flow of skilled labor which is unavoidable impact on civil engineers (ASEAN Secretariat, 2008). So, it is essential for civil engineers to put more attention to prepare ourselves for this change. This research aims to study the competency problems of Lao civil engineers. The result of this study can be used as data to encourage Lao civil engineers to improve themselves and also be the baseline data of competency problems of Lao civil engineers, construction firms, education institutes, professional engineering institutions, administrative organizations as well as Ministry of Public Work and Transport.

Objective

This research aims to find out the competency problems of Lao civil engineers in Lao PDR.

Scope and Limitation of Study

Unit of analysis is individual level. Random sampling method has been used to find the samples. The questionnaires were distributed to civil engineers working at both public and private sectors.

Theory of Competency

A competency is an underlying characteristic of an individual that cause superior performance in a job or situation (Spencer and Spencer, 1993; Boyatzis, 1982).

Five type of competency characteristics: motives, traits, self-concept, knowledge and skill. The components of competency can be seen as the group of hidden and visible level as shown in Figure 1

Nevertheless, behavior without intent doesn't define a competency as shown in Figure 2 below.

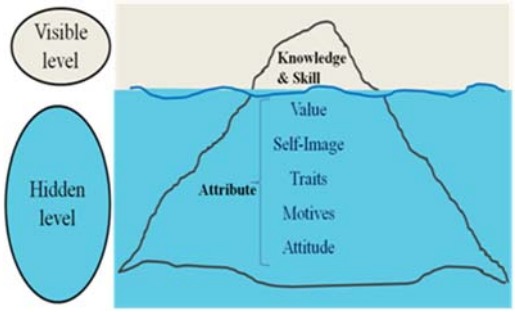

Figure 1 Level of competency components (Spencer and Spencer, 1993)

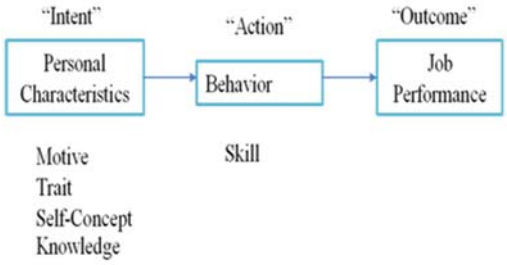

Figure 2 Process of job performance

Theory of Project Process

The project process are performed by the project team and generally fall into one of two major categories (PMI, 2008): 1) project management processes which encompass the tools and technique involved in applying the skills and capabilities described in the knowledge areas, and 2) product-oriented process which are various construction techniques and tools must be considered when determining the overall complexity of the house to be built.

Conceptual framework

This study gathers the concepts and theories of competency (Spencer and Spencer, 1993) and project process (PMI, 2008) above to synthesize into three groups of factors: 1) managerial factor, 2) technical factor, and 3) Attribute factor as shown in Figure 3 below. Moreover, the personal background is also a variable group that may cause different influence to the competency of each single respondent. Therefore, background of the respondents must be included to find the competency problem of Lao civil engineers.

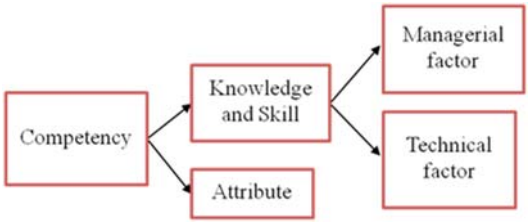

Figure 3 Conceptual framework

Research Methodology

The unit of analysis of this research is individual level, which are the civil engineers under both public and private sectors. Sample, using the random sampling method, and the questionnaires were distributed to civil engineers from both public and private sectors with sample size of 370. In order to archive this amount of sample size, 20 percent of 370 were added to become the amount of 444 (Yamane, 1973). The questionnaires were returned 169 sets which are 45.7 percent of sample size. According to the theory, using the questionnaire technique to collect data, normally researcher could collect data back for only 20-25% of the questionnaires (Saengkeo, 1998; Otieno et al., 2013). and data was analyzed by using descriptive statistic and severity index.

The questionnaire was divided into 4 parts: 1) For part one of the questionnaire are provide to collect the back ground of respondents, which are gender, age, education level, work experience, work sector, work duty of civil engineers; data was

analyzed by frequency and percentage (%). 2) For part two, three and four of the questionnaire are provided to collect the competency problems of Lao civil engineers related to managerial knowledge and skill, technical knowledge and skill and attribute respectively which impact the success work performance. Likert-Scale with five point scales was used to measure the frequency and impact level of the competency problems related to managerial knowledge and skill, technical knowledge and skill and attribute respectively to evaluate the severity index as shown in Table 1 below.

Table 1 The questions to measure the severity index of competency problems of Lao civil engineers

Set of questions	Number of questions
1. Back ground of respondents	6
2. The competency problems of Lao civil engineers related to managerial knowledge and skill (M)	
- Project scope management	1
- Project time management	5
- Project cost management	2
- Project quality management	2
- Project human resource management	10
- Project communication management	1
- Project risk management	1
- Project procurement management	1
- Project safety management	1
- Document and report management	2
- Construction contract	2
- Software and IT	2

Table 1 The questions to measure the severity index of competency problems of Lao civil engineers (Cont.)

Set of questions	Number of questions
3. The competency problems of Lao civil engineers related to technical knowledge and skill (T)	
- Site investigation	1
- Site survey	2
- Structural	3
- Construction drawings	5
- Inspection and testing	9
4. The competency problems of Lao civil engineers related to attribute (A)	
- Motivation	9
- Influencing	2
- Leadership	4
- Helping and human service	3
- Personal effectiveness	7
- Interpersonal effectiveness	7

Data analysis

Likert-Scale with five point scale was used to measure the frequency and impact level of the problems to evaluate the severity index of the competency problems of Lao civil engineer (Sinjaru, 2008; Thavilath, 2007).

Severity Index (S.I.) = (Impact) x (Frequency)

Interpretation: 1.00-5.00 means very low

5.01-10.00 means low

10.01-15.00 means medium

15.01-20.00 means high

20.01-25.00 means very high

Result

Among of responders from both public (53.9%) and private sector (46.2%), ages were between 30-39 years old (57.1%) with bachelor's

degree holder (65.1%), which work experience between 1-5 years (43.8%) of being site engineer (22.5%) and office engineers with (21.3%).

From data analysis of the competency problems of Lao civil engineers, the top ten ranking problems from overall mean score of severity index for technical knowledge and skill, managerial knowledge and skill and attribute problems are shown in Table 2 below.

Table 2 The top ten problems ranking of Lao civil engineers' competency (n = 169)

Competency Problems	Impact level	Frequency	Severity index (S.I.)	Interpret	Component
1. Poor quality control of construction activities	3.63	3.32	12.05	Medium	M*
2. Work behind schedule	3.52	3.37	11.86	Medium	M*
3. Lack of knowledge and skill to work in large construction project	3.61	3.28	11.84	Medium	M*
4. Poor quality control of materials	3.58	3.29	11.78	Medium	M*
5. Lack of safety planning	3.50	3.36	11.76	Medium	M*
6. Over budget of project implementation	3.60	3.24	11.66	Medium	M*
7. Poor English language	3.25	3.57	11.60	Medium	A*
8. Poor work instruction	3.24	3.53	11.44	Medium	T*
9. Low staff capability	3.50	3.26	11.41	Medium	M*
10. Lack of experience in construction management	3.45	3.29	11.35	Medium	M*

* M = Managerial, *T = Technical, *A = Attribute

From Table 2, the result illustrated the "Poor quality control of construction activities" was ranked at the highest place among of the top ten problems with (12.05) the mean score of severity index, evaluated as medium severity level, which is one of the problems in the Managerial group. The second and third places are the problem call "Late scheduled working" and "Lack of knowledge and skill to work in large construction project" respectively.

According to the result, the respondents found the managerial knowledge and skill problems were the majority competency problem of Lao civil engineers.

Conclusion and recommendation

These problems are important to be considered for competency of Lao civil engineers. Since Lao civil engineers are play the important role in improving the living standard of Lao people as

well as nation. The result of this study can be used as information for encouraging the Lao civil engineers to improve themselves and also be the baseline data on competency of civil engineer, construction firms, education institutes, professional engineering institutions, administrative organizations as well as Ministry of Public Work and Transport.

To reduce all these problems, the factor of problems should be studied or to reduce the competency problems of Lao civil engineers is to improve the competency factors, which is the next part of my research.

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