

## **CHAPTER VI**

### **CONCLUSIONS**

#### **6.1 Conclusions**

Many unexpected problems usually occur in construction project management in Cambodia mainly consisting of human resource problems and material resource problems due to many factors. Moreover, Lao PDR also has many project management problems in construction projects because the difficult inherence in the project management situations are compounded by the increasing complexity of environmental, regulatory, and project financing. Another country, Thailand has inadequate and ineffective control strategies for project management problems because contractor-caused delays are due mainly to the low technical and managerial competency of contractors. All of these problems must be appropriately managed and dealt with by many capable people in construction project; especially construction project manager who is the leader of the contractor's project team and is in charge of identifying project requirements and ensuring that all are accomplished safely and within the desired budget and time frame.

The first objective of this study is to rank the important knowledge areas of construction project manager of contractors as perceived by contractors, consultants, and owners in Cambodia, Lao PDR, and Thailand. Secondly, it is to successively explore their current level of competencies to apply the important knowledge areas in construction projects. Lastly, the recommendations would be proposed for improving the insufficiency of competencies of project managers of contractors by obtaining some suggestions from the perceptions of the contractors, consultants, and owners.

The necessary data was collected from contractors, consultants, and owners; three principle actors in building construction project, who would be asked to evaluate the knowledge and competencies of project managers of contractor based on the developed questionnaire. First of all, for Cambodia, there were 14 construction projects surveyed and 36 respondents interviewed including 14 contractors, 12 consultants, and 10 owners. Next, 11 construction projects were investigated in Lao PDR, and 24 respondents were interviewed consisting of 9 contractors, 8 consultants,

and 7 owners. The last country is Thailand whose 12 construction projects were surveyed and 31 respondents were interviewed comprising 12 contractors, 10 consultants, and 9 owners.

After firstly analyzing the collected data using Analytic Hierarchy Process, the results remarkably indicated that time management, quality management, cost management, and safety management, are respectively the 1<sup>st</sup> to 4<sup>th</sup> ranking of 13 knowledge areas in Cambodia, Lao PDR, and Thailand, based on the overall perception. These four knowledge areas are considered as the high important knowledge. Other analyzed knowledge areas are, on the other hand, in different rankings for each country.

On the other hand, the Relative Level Index (RLI) showed that the competencies of local project managers to apply the important knowledge from perceptions of contractors are generally in higher level than the perceptions of consultants and owners in each country. According to the results, the competencies to apply the important knowledge are mostly medium in Cambodia from overall perceptions, whereas they are mostly low from perceptions of consultants and owners such as time management, quality management, safety management, risk management, material management, labor management, human resource management, and subcontractor management. Similarly, all relevant competencies of Lao project managers are in medium level from overall perceptions, and all of their competencies are in low level from perceptions of consultants and owners including time, safety, cost, risk, document, communication, and material management. Unlike these two countries, the competencies of Thai project managers to apply the important knowledge are mostly medium and high from the perceptions of contractors, consultants, owners, and overall perceptions. Although competencies of Thai project managers are mostly in high level, it still needs some approaches to improve their competencies in order to reach the advanced level.

These results illustrated that the competencies of local project managers to apply the important knowledge in each country are still in a limited or certain level. That is why the components of each knowledge areas were studied and surveyed in detail in order to discover the weakness or inadequacy of local project managers in each country. The elements of each knowledge areas are also considered as the



evidence to validate the result of competency. After completing results and evidence discussion, it is well-defined that obtained results of competency levels and studied evidence are almost in same direction of level of competencies in each country.

From literature reviews to result discussions; the ways to improve performances of construction project managers in Cambodia, Lao PDR, and Thailand, were successfully explored. An example of improvement method is by conducting training which should be intensively provided by various methods in each country in an attempt to fulfill the partially or typically insufficient competencies of local project managers.

In summary, the competencies of Cambodian project managers involving time management, quality management, cost management, and safety management, should significantly be improved because these knowledge areas were considered as high importance whereas their competencies to apply these important knowledge areas are in low level based on the perceptions of consultants and owners. For instance, Cambodian project managers should learn how to use new scheduling techniques in terms of time management knowledge not only to develop their own knowledge but also to effectively estimate and control the completion of project within the limited time. Moreover, the competencies of quality control and improvement should be enhanced in order to increase the performance of quality management of project. It is recommended that, regarding the cost estimating software, additional workshops or trainings should be increasingly conducted in Cambodia in order to show local project managers new techniques or software and new cost control techniques for estimating and controlling the project cost with more accuracy. Lastly, the local project managers should learn more about safety management of how efficiently to conduct the safety strategy implementation and safety risk control.

The competencies of Lao project managers should be also enhanced in terms of high important knowledge areas and their competencies to apply these knowledge areas which are in low level, consisting of time management, quality management, cost management, and safety management. Regarding to time management, the new estimating software and techniques should be particularly provided to local project managers through short course and training so that they could learn more about the advantages of these software and techniques and how to apply these methods for

construction project while nowadays they are mostly using spreadsheet as the main time estimating tool. Of course, training will significantly allow them know more about the importance of quality management in project, how to successfully control the work quality and how to efficiently improve the quality. Furthermore, possible training or short course ought to be set up for Lao project managers in order to principally expand and enhance both their knowledge and competency of cost management by showing more estimating software and cost control techniques to develop the estimated cost and to control cost of the entire project. It is found that the competency of safety management is needed to be improved by letting them know more how to implement the safety strategies in construction sites.

For the last country, even though there are mostly high levels of competencies of Thai project managers, it is still necessary to improve their knowledge and competency to reach excellent or outstanding goal. For instance, the training should be conducted in term of time management to encourage them to supportively use and practice advanced scheduling techniques. Of course, advantageous training or short course should be conducted in Thailand in an attempt to provide new perceptions to improve their inadequacy of knowledge and competency related to the quality management. Additionally, regarding to cost management, new and efficient cost estimating software should be introduced for Thai project managers to be aware and learn to apply new computer programs for their current construction projects in order to improve their competencies and performance of project. In particular, regarding safety management, local project managers should learn more about how to set up the safety training programs for training construction teams such as engineers, foremen, and laborers, to implement the safety strategies all the time.

## **6.2 Limitation of Study**

The main constraint of this research is the limited time because there were a lot of data to be collected from not only three parties in construction project; contractor, consultant, and owner, but also three countries; Cambodia, Lao PDR, and Thailand. The short period of data collection significantly caused the collected sample not to correspond to the estimated sample. In particular, because the data were directly collected from the opinions or sensitivities of respondents, the questionnaire

should be more detail to get such data. Another constraint is the impossibility of data collection of private building construction projects. The research was supposed to gather data from both public and private construction projects to reach the required sample. This combination subsequently leads to having some differences between perspectives of project managers in private and governmental projects.

### **6.3 Further Study**

It is suggested that the further study should be conducted on this topic by some ways as following:

- 1) Each country should be studied in detail to find out the serious deficiencies and needs in terms of knowledge and competencies of local project managers
- 2) Other countries should be researched on this issue in order to represent the whole aspect in South East Asia