



## CHAPTER V

# RESULTS AND DISCUSSIONS

### 5.1 Introduction

In this research, all the contractors' problems that were collected from the interviews with contractors in Cambodia have been analyzed by comparing with the contractors' problems which have been occurring in the neighboring country, Thailand. All of these problems were classified into two different levels, industry level and project level. Also, the comparisons were derived by their different levels. The last, the result of its comparisons would be discussed in this chapter.

### 5.2 Analysis of data and findings

In view of this, data collection via interviews would be an appropriate approach. Since the aims of this study were to get a feel of the nature of the problem, and to recognize what information would be needed, unstructured interview were considered adequate. The unstructured interviews involved talking to project managers. Altogether, 15 unstructured interviews were conducted in Cambodia.

For the interview survey of this study, all of the information and problems were collected from 15 contractors in Cambodia, including the 5 contractor of small size, 5 contractors of medium size, and 5 more contractors of big size (See Appendix A). The collected problems (See in Figure 5-1) were focused on any problems and failures that contractors faced with their partners on their past construction projects in Cambodia.

All of these collected contractors' problems in Cambodia are listed and needed to compare with that were collected from Thailand which got from the previous studies, questionnaires and interviews with some contractors. The comparison between Cambodia and Thailand was conducted to find the similarities and differences of the problems nature, causes of the problems, and also the impact of the problems which occurred in Cambodia and Thailand.

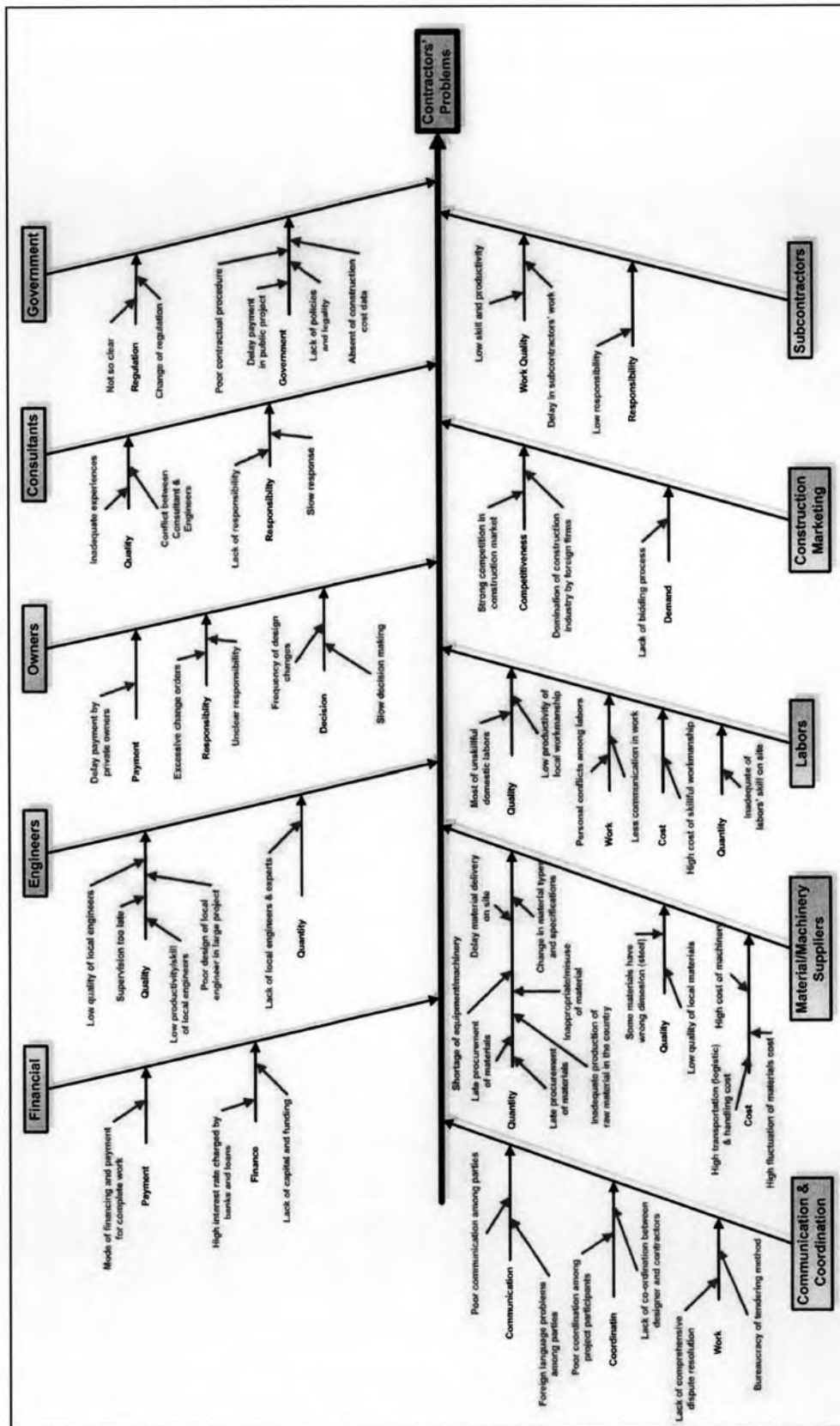


Figure 5-1 Cause-Effect Diagram of Contractors' Problems from Primary Survey in Cambodia

The Figure 5-1 shows the problems which were collected from the 15 contractors in Cambodia. The problems were classified by the contractor project partners, including the owners, consultant, engineers, government, material suppliers, labors, subcontractors, and marketing sector. There are a lot of problems which were collected during the survey.

### 5.3 Comparisons between Cambodia and Thailand

#### 5.3.1 *The Comparison of Contractors' Problems at Industry Level*

After collecting the contractors' problems from both Cambodia and Thailand, all of those problems which classified at the industry level in Cambodia were compared with the industry level in Thailand. The comparisons at industry level have been conducted in order to get the similarities and differences of between each problem in Cambodia and ones in Thailand which has described in details in chapter 4. All contractors' problems at industry level are the problems which have not impact only in those contractors but also on the whole construction industry of country. The result of its comparisons is showed in the table 5-1 below.

**Table 5-1 Comparison of contractors' problems at industry level between Cambodia and Thailand**

Categories	Contractors' Problems (at industry level)	Similar	Different
<b>Construction Regulation</b>	Not clear construction regulation in country		✓
	Change of construction regulation		✓
<b>Government</b>	Delay payment in public project	✓	
	Absent of cost data in construction		✓
	Lack of government policies and legality for construction industry development		✓
	Poor contractual procedures	✓	

**Table 5-1 Comparison of contractors' problems at industry level between Cambodia and Thailand (Continues)**

Categories	Contractors' Problems (at industry level)	Similar	Different
<b>Human Resources</b>	Most of unskillful domestic labors	✓	
	Low productivity of local workmanship	✓	
	Low quality of local engineers		✓
	Lack of local engineers and experts		✓
	Poor design of local engineer in large project		✓
<b>Material &amp; Machinery Resources</b>	High fluctuation of materials cost		✓
	High cost of machinery	✓	
	Shortage of materials in the country		✓
	Inadequate production of raw material in the country		✓
	Shortage of equipment/machinery		✓
	High transportation (logistic) and handling cost		✓
	Low quality of local materials		✓
	Lack of competent suppliers		✓
	Low productivity and efficiency of equipment		✓
	Lack of high-technology mechanical equipment		✓
<b>Financial</b>	Mode of financing and payment for complete work	✓	
	High interest rate charged by banks and loans	✓	
	Lack of capital and funding		✓
<b>Coordination &amp; Communication</b>	Poor communication among parties (Owners, Consultants, etc)	✓	
	Foreign language problems among parties	✓	
	Bureaucracy of tendering method		✓
<b>Construction Marketing</b>	Strong competition in construction market	✓	
	Lack of bidding process		✓
	Domination of construction industry by foreign firms		✓

By the table 5-1 above, we can define that most of contractors' problems in Cambodia classified in each category; some of them are similar and some are different to Thailand. Both of their similarities and differences are the primary finding outcome that we need to discuss in this chapter. As a result, by comparison all contractors' problems among 30 problems at the industry level between Cambodian and Thailand, we found that there were totally 10 problems which are similar.

Conversely, there were 20 problems which are different. We also get the discussion of the comparison category by category as following.

#### **5.3.1.1 Construction Regulation Problems**

Regarding the construction regulation related to the construction project work, Cambodia has still poor management of construction regulation in the nation. Comparing to neighboring country Thailand, the problems related to the construction regulation is not the major problems for their contractors. In Thailand, there were only some contractors who were affected from the regulation problems. Yet, the management and application of construction regulation in Cambodia are still the most concerns for other contractors. Beside, Cambodia still has no local standard and code for the construction structural design. For every project, the agency has just checked only the architectural design without verifying the structural design drawings. Unlike Cambodia, Thailand has its own well construction regulation and their national construction standard code and specification are clear. Thailand never met the problems that were affected from the change of construction regulation in the country, but Cambodia has done. Cambodia has some problem for the construction development in the country, sometimes the project could affect the surrounding people community, and they always met some conflict with the official and local people nearby. It could make some project has to stop for period of time in order to negotiate with those people before continuing their project again.

#### **5.3.1.2 Problems by Government**

Unlike Thailand, the government of Cambodia has no the agency who is responsible for the cost data in construction and also they have lack of policies for construction and any guideline for the construction industry development. Until now, Cambodia still has no the contractor association in the country that help solving any disputes for the engineers and contractors who have suffered from their working. It may cause the difficulty in selecting the right skillful engineer because there is no license from that association. Without the engineer association, the local engineer has not got a license providing. Moreover, the contractors are hard to identify and find the skillful and experienced engineers in the country. Oppositely, Thailand has a

contractor association and engineer counsel that can help their registered members who have encountered the problems in their career and help run their project smoothly. This is an advantage for the contractors registered in this association. The government change in Thailand could affect for the policy and regulation to the contractors, change of policy could change and postpone their project as well. Whereas, Cambodia government is still same and stable till now. Many contractors and investors don't be afraid of recent situation in Cambodia, unlike last decade ago. They notably come to invest and involve in the construction sector increasingly during recent years. Moreover, Cambodian government often approved and appreciated the foreigners who will want to come and invest in the construction sector.

Regarding the construction of public projects which the owners are the government department, the payment by that department often faces the delay or late due to many reasons, for example the poor contractual procedure, late work procurement, financial system, banking system with long period of budget withdrawing etc,. We found that contractors in Cambodia and Thailand have encountered the problem of delay payment in public project similarly. And the still also have a poor contractual procedures, but it was found sometimes only.

#### **5.3.1.3 Human Resources Problems**

Same to Cambodia, shortage of labor is also found to be a major factor contributing to the contractors in Thailand. Shortage of manpower, productivity of manpower and the skill of manpower are among the most significant causes of delays in Thailand and also in Cambodia. But Thailand has faced this problem less than Cambodia done concerning of the quality and productivity of local labors. In Thailand, they need more labor from oversea every year to fulfill the construction work. Whereas, in Cambodia the shortage of labors and engineers is not the major concern for the contractors, but the most concern is the shortage of skillful labors and engineers in the country. Some labors in Cambodia and Thailand are mostly farmer which don't have skillful experiences of construction, they just come to the capital city to find construction job in the dry season but in the rainy season they mostly return home for planting rice field. This becomes the simple problem in Cambodia and Thailand related to the number of labor to support the construction sector.

The quality and quantity of labor supply can have major impact on the projects. In Thailand, a few of them are illegal workers and their work quality is relatively low when compared to local laborers. The difficult of language communication among labors is one problem for the contractor in Thailand to discuss. The low quality and productivity of the foreign workers have impact on the project progress and efficiency. Whereas, Cambodia has all of local labor to support, so the problem of language is not much concern. Oppositely, the conflict among labor becomes the problem instead. The illegal workers are frequently caught by the Thai immigrant officials and deported and this causes shortage of labor pool in the construction industry.

The most effective concern in Cambodia, it is not the labor quantity. It is clearly the productivity of labors with low experience. And, it also lack many amount of local engineers and quality of them. Compare to Thailand, Cambodia has little of skillful engineers who could manage the medium and big project very well. It caused from the academic sector that has produced in less quantity and less quality of graduated student in starting their new work. The fresh graduate engineers involve in the construction project, often met a lot of problem in their work related to the low experience. The productivity of engineer in Cambodia is too lower than Thailand. Thailand has some high educational institution in the country that can make the quality engineer to adapt with new construction project very well.

#### **5.3.1.4 Material/Machinery Resources Problems**

Unlike Cambodia, the problem of material related causes in Thailand received low ranking among other contractors' problems. Quality of material was among the least important causes because most of the available material is produced in local with little variation in quality, especially for cement, steel, and asphalt that are produced by a limited number of procedures. Oppositely, in Cambodia the shortage of material received higher ranking than quality. This is particularly true for imported material that may take a considerable time to procedure. Most of main construction material has been imported from neighboring countries such as Thailand, Vietnam and China. That is why the price of main material is higher than Thailand because Thailand has the own local material to support in the whole country. In Cambodia, sometimes the order of material and its delivery is too late to be on site, they are several factor such

as mode of transportation, the road condition is poor, and there are less stakeholder in the country to import the material, especially in some suburb and provincial area. But nowadays, Cambodia has some cement plants in the country but the production is not enough to support in the country, but they have policy to increase their production in near future.

In Cambodia, shortage in basic material like sand, cement, stones, bricks and steel can cause fewer delays in projects. For the main machinery, both countries have to import from other countries, such as Europe, Japan and China. But the amount of modern equipments such as Tower crane, testing equipments in Cambodia is less than Thailand. So some contractors in Cambodia have to purchase or rent from oversea. That is one problem that the contractor often met.

#### **5.3.1.5 Financial Problems**

The financial problems such as high interest rate, mode of payment to complete work and the lack of capital of contractors are also found in Thailand, they studied about the delay of project due to the financial problems, that the financial difficulties and economic problems by owners ranked among the top ten factors causing delay in construction projects. That is also same as contractors' problem in Cambodia. By the survey in Cambodia, the contractors have mostly met the financial difficulties in their organization and also the payment from owners to complete work in time. As well, the high interest rate charged by banks and loans is one of contractor concern for thinking in Cambodia. Consequently it can be said that the financial problems in Cambodia and Thailand are very similar.

#### **5.3.1.6 Coordination and Communication Problems**

In Cambodia, some contractors talked about communication with their problem with foreign consultants or owners, the foreign language problem using in their construction project, especially the foreign contractor with domestic owners. But it seems not to be the major problems among others, because they can use English as common second language in their work. The problem of communication was also found as the same nature in Thailand. So it could be concluded that the Cambodia and



Thailand have the same problems related to communication in their construction projects in term of communication among their participants.

In Thailand, since there are many parties involved in a project (client, consultant, contractor, subcontractors), the communication between the parties is very crucial for the success of the project. Proper communication channels between the various parties must be established during the planning stage. Any problem with communication can lead to server misunderstanding and therefore, delays in the execution of the project.

#### **5.3.1.7 Construction Marketing Problems**

By the previous studies Thailand, they did not focus the construction delay or any problems related to the marketing problems, but it is found in Cambodia during the interview survey. Especially, it is found the domination of construction industry by the foreign firms, for example the hard competition between small and medium contractors with the big ones. Moreover, for the domestic contractors, the competition with the foreign contractors is very concern in Cambodian construction industry nowadays. Concerning the construction marketing in Cambodia and Thailand, it is found that they may not be similar. Lack of bidding process in Cambodia is one example for all small and medium contractors. That is different from Thailand; most of projects have often done with the bidding process. It means that it is a bit hard to find the new construction project in Cambodia for inexperienced contractors. They have to compete with the foreign experienced contractors or local experienced contractors as it could say that it is a narrow construction market.

#### ***5.3.2 The Comparison of Contractors' Problems at Project level***

After comparing the contractors' problems at industry level between Cambodian and Thailand, the problems classified at project level in Cambodia were also needed to compare with Thailand. The comparisons at the project level lead to the similarity and difference between Cambodia and Thailand that we could collect from some previous studies and new surveys in Thailand. The survey collected from the questionnaires in Thailand are got for the problem in Cambodia, it could be an easy way to find their similarities and differences.

**Table 5-2 Comparison of contractors' problems at project level between Cambodia and Thailand**

<b>Categories</b>	<b>Contractors' Problems (at Project level)</b>	<b>Similar</b>	<b>Different</b>
<b>Owners</b>	Delay payment by private owners		✓
	Slow decision making	✓	
	Excessive change orders by owners during construction	✓	
	Unclear responsibility	✓	
	Frequency of design changes	✓	
<b>Consultants</b>	Inadequate experience of consultant	✓	
	Lack of responsibility of consultant	✓	
	Slow response	✓	
	Conflicts between consultant and site engineers	✓	
<b>Subcontractors</b>	Delay in subcontractors' work	✓	
	Low responsibility of subcontractors	✓	
	Low skill and low productivity of subcontractors		✓
<b>Material Resources</b>	Delay material delivery on site		✓
	Inappropriate/misuse of material for project	✓	
	Change in material types and specifications during construction	✓	
	Late procurement of materials		✓
<b>Human Resources</b>	Inadequate of labors' skill on site	✓	
	Less communication in work by labors	✓	
	Supervision too late	✓	
	Personal conflicts among labors	✓	
	High cost of skillful workmanship	✓	
	Low productivity/skill of site engineers		✓
<b>Communication</b>	Lack of comprehensive dispute resolution	✓	
	Lack of co-ordination between designer and contractors		✓
	Poor coordination among project participants	✓	

By the table 5-2 above, we can define that most of contractors' problems in Cambodia classified in each category; most of them are similar and less of them are different to Thailand. Both of their similarities and differences are the primary finding

outcome that we need to discuss in this chapter. As a result, by comparison all contractors' problems among 25 problems at the project level between Cambodian and Thailand, we found that there were totally 19 problems which are similar. Conversely, there were 6 problems which are different. So, we can find that the comparison at the project level, there are most similarities than difference. We could say that Cambodia and Thailand have mostly the same problems at project level. We also get the discussion of the comparison category by category as following:

#### **5.3.2.1 Problems by Owners**

Comparing the owner's problems between Cambodia and Thailand, it is considered that Cambodia always met several problems related to the owner than Thailand, for example the delay or late payment by owners, slow decision making from the owners, frequent change orders. All of these problems mostly occur in Cambodia due to their poor contract and procurement. But, only small amount of contractors in Thailand have met this problems as well. In Cambodia the late payment by owner caused from that owner financial problem. It could be found in most of construction projects in Cambodia.

In Cambodia, they had found that construction works involve huge amounts of money and most of the contractors find it very difficult to bear the heavy daily construction expenses when the payments are delayed. Work progress can be delayed due to the late payments from the clients because there is inadequate cash flow to support construction expenses especially for those contractors who are not financially sound.

#### **5.3.2.2 Problems by Consultants**

Concerning the consultant problems affecting to the contractor in Cambodia, it is found that most of consultants have low experiences with the lack of responsibility for the construction project. Additionally, it is also found that in most of project in Cambodia, there still have some conflicts between consultant and site engineers during construction. Most of consultants rarely support of engineer decision, they always force engineer to follow their opinion.

Similarly, by the questionnaire and interview in Cambodia and Thailand, it was found that consultants are very important in construction projects; this factor is also considered to be one of the most important factors that can cause delays in construction projects. The factors “slow to give response or instructions” and “lack of consultant’s experience” are the primary causing delay in construction projects. The next factor refers to the respondents’ perception of weakness in consultant management as a factor that causes delays in construction projects. For example, the factors “incomplete documents”, “lack of consultant’s experience” and “absence of consultant’s site staff”.

#### **5.3.2.3 Problems by Subcontractors**

By the previous study and questionnaire from Thailand, typically in some projects, there are many subcontractors working under main contractors. If the subcontractor is capable, the project can be completed on time as planned. The project can be delayed if the subcontractor under performs because of inadequate experience or capability. High degree of subcontracting in Thailand leads to high risk of delays and this leads to inefficiencies in the Thailand construction industry.

Likely, by this research, contractors in Cambodia have also faced the problems with subcontractor which they hired to work for subcomponent of the project. It is found that some part of delay in construction project is caused from the delay in subcontractors’ work. Some subcontractors always make a low responsibility and productivity in their subcontracted work.

#### **5.3.2.4 Material Resources Problems**

Every construction projects in Cambodia frequently faced the problems concerning the construction materials, such as steel and cement that is the most important main material for the building projects. All of these materials have to import from other countries, mostly from Thailand and China. That is why it can make the delay material delivery on site. Concerning the material-related problems in Thailand, the problem related to the material resources is different to Cambodia. They can control this problem better than in term of material supply on site. There is no lack of construction material in Thailand and this is not the most concern for any

contractors working in this country. Thailand can produce main material in local except equipment and machinery that has to import. Moreover, Thailand has a good logistic factor, they have good road for material and equipment transportation. Whereas, Cambodia still has poor road condition, so the price of transportation is higher than Thailand including the imported material price.

In Thailand, the materials purchases for most of the sites surveyed by previous study were made by the head office though few sites could purchase materials directly in emergencies. Blame for materials shortages on sites were placed on unreliable supply from materials suppliers occasioned by the general shortage in the industry, although there were specific instances in which poor communication between sites and head offices and purchasing planning and co-ordination could be cited as the problems. It is different to Cambodia, shortage of material resources is also found to be a major factor contributing to the delay. But it still has a different part, unlike Thailand; most of contractors in Cambodia have to import the construction material from overseas. That is why the price of imported material is a bit higher than Thailand and other developing countries which have manufacturing plants in the country. Moreover, the material shortage and quality in Cambodia is the main problem in their construction project due to less competent suppliers in local. But Thailand has rarely met all of these problems.

#### **5.3.2.5 Human Resources Problems**

Cambodia is a country which still has fewer amounts of human resources in the country, including the construction technical labors and engineers. By the survey, it is found that there are much inadequate of labor skill on construction site. It is hard to find much labor skill to support in the construction project. Most of labors are Cambodia were farmers before they found a construction job instead in the capital city and other economic cities. Most of them are unknowledgeable; they have low knowledge even studying in elementary school. So the communication of labor is hard to adapt easily in the project. They always have conflict among their colleagues. Concerning safety in the construction, Cambodia still has poor safety control of workers on site. Most of them never trained before starting work.

Comparing Thailand with Cambodia, the shortage of workers is believed to be due to several factors. Demand increased greatly while supply from educational institutes and training centre was relatively constant. Prior to the boom era, many construction workers had migrated to the other countries such as Dubai, Singapore, Malaysia, Korean or Taiwan where wages were much higher than in Thailand. This migration also found in Cambodia as well. Within Cambodia, local contractors usually pay less than foreign contractors. As such, they are not as competitive as foreign contractors in attracting competent personnel.

Like Cambodia, the scarcity of technical personnel in Thailand is due to the inelasticity of supply. Local educational facilities are not sufficient to meet the demand in boom years. The little construction manpower that is qualified can easily get higher salaries by moving between jobs. In so doing they increase their salaries without a corresponding increase in technical ability.

Unlike Thailand, The manpower problems in Cambodia have created serious quality control difficulties for project management. It is generally accepted that the often low quality standards of the buildings is due to the quality and supply of construction manpower. All of these above problems are also found less in Thailand, but they did not concern much about the manpower.

#### **5.3.2.6 Communication Problems**

Contractors have met also the communication problems in Cambodia. Lack of comprehensive dispute resolution and the lack of co-ordination between designer and contractors are found to be the problems for some contractors. They always have poor coordination among the project participants such as owner, consultant, and subcontractors. All of these above problems are found similarly in Thailand. This becomes the common problems for the contractors Cambodia and Thailand. It is just only they face frequently or rarely, it is also related to the size of their construction projects. The bigger project they had, the more crucial problem related to communication problems they faced.

#### 5.4 Basic Guideline of Problems Solving in Cambodia

Along with the information regarding the contractors' problem in Cambodia, we also interviewed some domestic and foreign experienced contractors who are working in Cambodia for getting knowledge and solutions to solve all of those problems happened in their last projects. Combining with problems solving in some developing countries from the literature review, we could have a basic guideline of problem solving in Cambodia as follows:

1. The contractors should focus on the contracts signing with the owners before the starting the construction projects. Only appropriate contract could make the contractor in the right way and confident to control the construction projects.
2. The Government should also seriously consider extending assistance programmes to other members of the supply chain within the industry. In addition to developing emerging contractors, other players such as new suppliers and plant hire entrepreneurs etc, equally need support as they form a critical sector of the industry. This will help reduce monopolistic tendencies among few suppliers that may result in poor delivery at the procurement level.

The system of direct payments for materials as it currently stands does not help the contractors. The dedicated account system is a preferable arrangement as this gives the contractors more leverage in dealings with oversea stakeholders or suppliers while at the same time safeguarding the supplier's interests. The original aim is to develop the contractors first and the government may have to put in extra resources in terms of manpower and funds to sustain this kind of arrangement

3. Training of labors and engineers ranks as the most important intervention at this stage by the contractors and government. The policy must ensure that labors and engineers who benefit from these schemes have undergone training provided by Government institutions established for this purpose.
4. Annual license renewals on the labor and engineering skills should be made mandatory and their attendance to skills improvement courses should be among the criteria.