

A Case Study of Risk Management Process of Infrastructure Construction Project in Thailand

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1. Introduction

Infrastructure construction project financed by an international lender has been continuously important in public construction works in Thailand as well as other developing countries. In the sophisticated environment governed by the contract and involvement of many parties, managing risks through the sole intuition is probably inadequate. In order to assure the success of project; therefore, application of the risk management process is useful. Conventional risk management process (RMP) has been employed to assist decision-makers instead of using solely intuition. Nevertheless, the limitations of the conventional RMP are that only one party is generally considered and the objectives associated with multiple project participants may be overlooked in the analysis. When a risk affects parties involved, it is important to answer the question of how to properly identify risk and what is the best response that is desirable for all parties. A systematic process of managing risks in a multi-party environment is thus required.

The purpose of this paper is to summarize the development and application of a RMP in a multi-party environment entitled the multi-party risk management process (MRMP)^{1), 2)}. The MRMP has been developed and applied to a public bridge and elevated construction road project located in Thailand as a case study. This case studied project was proportionally financed by Thai government (45%) and the Asian Development Bank (ADB) (55%). The aim of application was to demonstrate and discuss applicability of the MRMP. In the case study, the procurement and construction stages have been studied. The perception of three main parties i.e., the executing agency, the contractor, and the consultant have been investigated.

2. MRMP Development

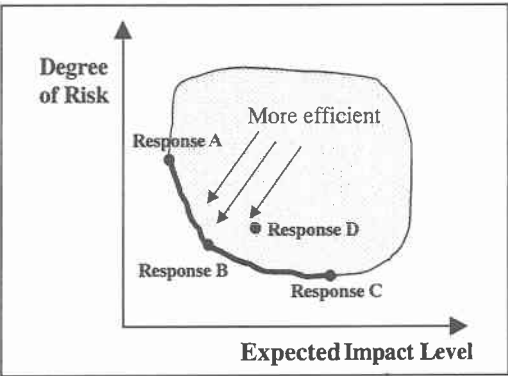


Figure 1: Risk efficiency concept

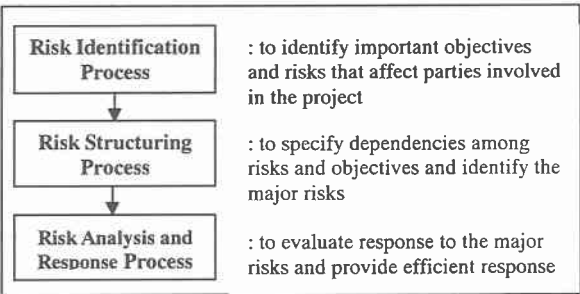


Figure 2: Three main processes in the MRMP

3. MRMP Application

The case studied project is located in southwest of Bangkok. The construction cost of project is approximately 1.1 billion bath (included VAT). The notice to proceed date of this project was on June 1, 1997. Project duration is 900 days plus 480 days for the time extension. This project was evaluated by the ADB as partly satisfactory; therefore, it was selected for application of the MRMP. The study period of the MRMP application was around three months starting from December 1999 to February 2000. Eventually, the project was substantially completed on March 11, 2001.

Table 1: Summary of Research Findings

Party	Objective	Major Risk	Efficient Response	MRMP Contributions
<u>Procurement stage</u>				
Executing Agency (EA)	Capable CT	- Delay in awarding contract	- Preparing clear bid document	- Response efficiency evaluation (same as conventional RMP)
Contractor (CT)	Contract price	- EA lacks experience in procurement process	- Capable and experienced CS assists EA in procurement process	- 'Objective' evaluation of each party
<u>Construction stage</u>				
Executing Agency (EA)	Schedule, Budget, Quality			- Multi-party risk-response-risk evaluation
Contractor (CT)	Schedule	- CT's liquidity and financial problem	- New capable CT joins or takes over the current CT	- Multi-party response efficiency evaluation
Consultant (CS)	Schedule			- Response characteristics evaluation

After going through risk identification, risk structuring and risk analysis and response processes in the case studied project, the results revealed the significant risks associated with each party's important objectives in the procurement and construction stages, the efficient responses to each significant risk, and the MRMP contributions associated with the results. The findings from application are summarized in Table 1.

4. Discussion of MRMP Application

Analyzing the results of the MRMP application, it was found that a number of contributions of the MRMP were extensively developed from the conventional RMP (as shown in the last column of Table 1). First, the chance of 'objective' evaluation of another party is offered. A party can notify the deficiency regarding the experience, technical or managerial skill, etc, of other parties involved in the project during the identification of risks. Second, risks to one party occurring from a response taken by another party can be notified, which is the multi-party risk-response-risk chain. Third, the multi-party response efficiency evaluation is provided. From this premise, in order to manage risk more efficiently, it is desirable to find a response, which is risk efficient to all related parties. Fourth, the response characteristics (i.e. risk avoiding, risk neutral, and risk seeking) associated with a major risk can be specified from the presentation of variance-expected impact map. This feature could assist decision-makers to find and select the most preferable response for all the parties. These illustrate advantages of incorporating multiple parties in the risk management process.

5. Concluding Remarks

On the subject of development and application of the MRMP, the MRMP still has a limitation that it does not discuss the issue of risk allocation. The framework of the MRMP may be, however, feasibly used in assisting the allocation of risks in contract in a more systematic manner. Moreover, the risk analysis and response process in the issues of quantification of probability of occurrence and impact of risk is desirably to be improved.

Applying the MRMP will not remove all risks, however, it will enable decision making for mitigating the potential effect of certain risks, and providing the efficient response. Improved project performance from such decision making will definitely bring the benefits to not only the main parties directly participating in execution of the project but also other stakeholders such as taxpayers and users of the infrastructure project .

References

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