

Applicability of Multi-party Risk Management Process (MRMP)

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1. Introduction

To overcome the limitations of the conventional risk management process (RMP) that only one party is generally considered and the objectives associated with multiple project parties may be overlooked in the analysis, a new RMP entitled multi-party risk management process (MRMP) is proposed by Pipattanapiwong and Watanabe¹⁾. By considering involvement of several parties in a project, the proposed MRMP attempts to solve those limitations of RMP and to answer the questions of how to properly identify risk and what is the best response that is desirable for all parties, when a risk affects parties involved. The proposed MRMP consists of three main processes i.e., risk identification, risk structuring, and risk analysis and response processes. Its aim is to assure decision-makers that risks are managed systematically and efficiently in a multi-party environment. The MRMP was developed based on the concept of risk efficiency²⁾. Theoretically, the efficient response provides a minimum level of risk for a given level of impact and a minimum level of impact for a given level of risk. In analysis, risk is defined as the deviation of the level of impact from the expected impact of risk associated with the alternative responses. This paper aims to discuss the applicability of the MRMP based on results of post-evaluation of its application in an infrastructure project.

2. Application of MRMP

Recently, in public construction works in Thailand as well as other developing countries, the importance of infrastructure construction projects financed by an international lender has been continuously increased. It is important to implement this type of project smoothly. As a case study to apply the developed MRMP, a public bridge and elevated construction road project proportionally financed by the Thai government (45%) and the Asian Development Bank (ADB) (55%) located in Thailand was selected. The final construction cost of project is approximately 1.2 billion baht exceeding from original contract value by approximately 0.1 billion baht due to adjustment for quantity changes, variation orders, and price adjustment. 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. The project was substantially completed on March 11, 2001. This project was evaluated by the ADB as partly satisfactory; therefore, a primary objective of the case study was to find a way of better managing major risks in this project by applying the MRMP. The study period of the MRMP application was around three months starting from December 1999 to February 2000.

The MRMP was applied during the construction stage of project. It was assumed that the MRMP was applied in the later part of procurement stage. The perception of three main parties including the executing agency, the consultant and the contractor participating in the procurement and construction stages was investigated. The results of the MRMP application are shown in Table 1. Contributions of the MRMP are described in the last column of Table 1.

Table 1: Summary of MRMP application results

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	- CT's liquidity and financial problem	- New capable CT joins the current CT	- Multi-party risk-response-risk evaluation
Contractor (CT)	Schedule			- Multi-party response efficiency evaluation
Consultant (CS)	Schedule			- Response characteristics evaluation

3. Post-evaluation of MRMP application

To discuss applicability of the MRMP, post-evaluation of the MRMP application was conducted twice. The first time was six months after the application; and the second time was just after completion of project. The post-evaluation consists of 1) following-up how major risks were actually managed, 2) comparing the actual ways of risk management and those suggested from the MRMP, and 3) studying reasons for limitation of the MRMP if there is any. In the post-evaluation, the evaluation result of response towards "the contractor's liquidity and financial problem risk" was particularly focused in the construction stage. The data were mainly collected from the secondary data such as a final project report and unstructured interview with

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respondents from the same groups as those when the MRMP was initially applied: the executing agency, the contractor, and the consultant.

Findings from the first post-evaluation were as follows. From the MRMP application, the response that “a new capable contractor joins the current contractor” was obtained. This response was similar to the response actually taken. In the real situation, the new contractor has joined informally the current contractor as a subcontractor. According to project progress reports, the progress of project has gradually improved after the new contractor joined the current contractor. Despite improvement in the progress, however, the respondents from the executing agency and the consultant thought that conflict between the current contractor and the new contractor related to financial issues had been occurring. The project manager from the contractor responded that there was difficulty in working together with the new contractor. The conflict was mainly related to financial issues such as the payment from the executing agency.

It was found from the second post-evaluation that the project could be eventually completed on March 11, 2001 according to the second revised project schedule. The final project cost exceeded the original value, but it was because of variation orders issued by the executing agency and price adjustment based on cost indices specified in the contract. However, the both contractors were in deficit. They could not make claims for overrunning costs and had to absorb the loss associated with them. It was also found that the conflicts were occurring not only between the two contractors but also between the new contractor and the bank.

4. Discussion of applicability

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 each 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 process 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 RMP.

From the MRMP, the response that “a new capable contractor joins the current contractor” towards “the contractor’s liquidity and financial problem risk,” the most significant risk in the construction stage, was evaluated to be risk-efficient for the all three parties: the executing agency, the consultant, and the original contractor. This response became undesirable for the both contractors; however, when it had been implemented. During the MRMP application, the three parties did not perceive the consequence risk of the conflict between the contractors significant after the response would be taken. The original contractor could not perceive this consequence risk at all. The executing agency and the consultant have perceived “conflict between contractors risk” as a consequence risk; however, they both asserted that the project could be smoothly completed because of excellent capability of the new contractor.

Underestimation of impact of this consequence risk, the conflict between the two contractors, is potentially caused by a bias associated with “wrong” timing of the MRMP application. When the MRMP was applied, “business” of the response that the new contractor joins the current contractor was in progress. In order for the respondents to justify their response, therefore, they might have underestimated impact of the consequence risk associated with this response and overestimated that associated with other responses. It is definitely important to apply any risk management technique when no predetermined solution is being developed or implemented.

When the MRMP was applied, the new contractor was not incorporated as another player assuming that the new contractor had a similar perception to the original contractor. But this assumption was wrong. The new contractor had been encountering the difficulty due to conflict with the original contractor and the bank. The new contractor still pursued the works, however, for needing a job during no-works period, keeping a good relationship with the original contractor, and building-up a high reputation. Thus, the objectives of the new contractor may not be the same as those of the original contractor. It was additionally found from the post evaluation that the new contractor did not have correct information on the project status when the new contractor was joining the original contractor. The original contractor withheld necessary information related to the amount of remaining works. Analysis of the new player should be carefully done because she or he may have different objectives from existing players and not have correct or sufficient information on the project status.

In this case study, when risk occurred in practice, all parties used no “formal” or systematic risk management process. The practitioners made their decisions based on only experience; and risks were managed individually not collectively. The limitations of the MRMP identified in this study needs to be solved to make the MRMP more applicable to analysis of a real construction project. Commitment to risk management by all major parties from early stage of the project is desirable. The MRMP seems to have a potential to support such a desirable practice.

References

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