Risk management maturity of the supervising consultant on quality and time performances in construction building

Risk management maturity of the supervising consultant on quality and time performances in construction building

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Abstract. Construction of buildings has a complex type of work. Detailed work does not only refer to the technical specifications and drawing plans that have been set, but there are also construction norms and work steps that need to be understood by the Supervising Consultant in achieving project objectives. There are often problems with quality and time control, so the ability to manage risk from the Supervising Consultant needs to be known and analyzed. Based on this analysis, it can be determined the level of risk maturity of the Supervising Consultant in overseeing the implementation of building construction. The purpose of this study is to obtain the maturity level of the Supervising Consultant in managing risks related to quality and time performances. This study uses descriptive analysis and Analytic Hierarchy Process (AHP) to get category in risk control. The results of the study indicate that the Enterprise Risk Maturity criteria assessor obtained maturity level 4. This means that the Supervising Consultant has a supervisory system on the implementation of risk management, the principles have been implemented and accompanied by periodic improvements in terms of control.

1. Introduction

Capability Maturity Model (CMM) was originally intended as a tool that objectively assessed the ability of government consultants to handle software projects [1]. Although it comes from the field of software development, this model can also be applied as a general model that helps understand the maturity of organizational process capabilities in various fields [2].

1.1. What

To get construction products that are good in terms of quality and time, many things must be considered by Supervising Consultant in the maturity of risk management (Risk Management Maturity)[3]. Assessment of the level of maturity he supervisory consultant in managing risk needs to be known and studied so that their understanding and ability can be improved in overcoming risks during the construction period [4]. The maturity of risk management is done to anticipate the increasingly complex risks in construction projects [5,6]. Construction projects are one type of work that has a relatively high risk potential compared to non-construction work [7]. This is due to the unique characteristics of the project, the project team with varying expertise and a degree of uncertainty [8]. Construction projects are influenced by many unexpected variables and factors that require many different skills, materials, tools, and resources [5,6]. Managing these factors is not an easy matter, especially in the implementation

of the project there are many changes, for that there is a need for a process of identification and analysis of project risks. This aims to maximize the positive effects of opportunities and minimize the consequences of negative effects commonly called project risk management (Project Management Institute; PMI, 1996).

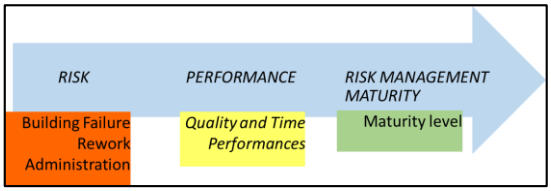

Figure 1. Risk management maturity.

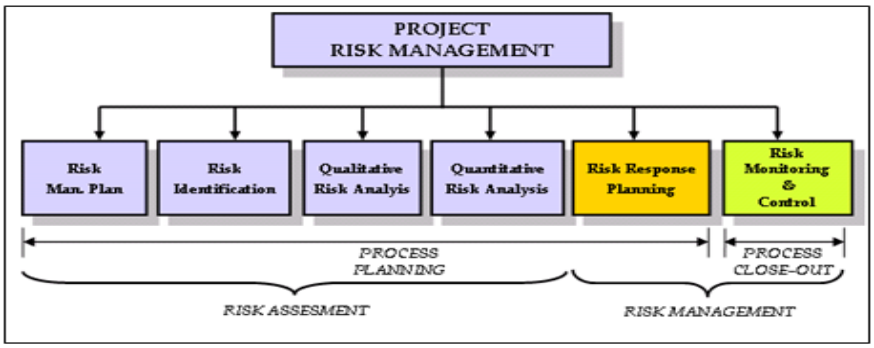

Figure 2. Project risk management.

1.2. Hypothesis

The risk management of building construction projects on the performance of quality and time by the Supervising consultant depends on the level of risk management maturity of the Supervising Consultant

2. Methods

2.1. Objectives

The objectives of this study were to obtain the maturity level of the Supervisory Consultant in managing the quality and time performance risk, to assess the maturity level of the supervisory consultant and to provide recommendations to improve the maturity of risk management supervisor consultant in supervising the construction work in terms of quality and time performance, can be seen in Figure 3.

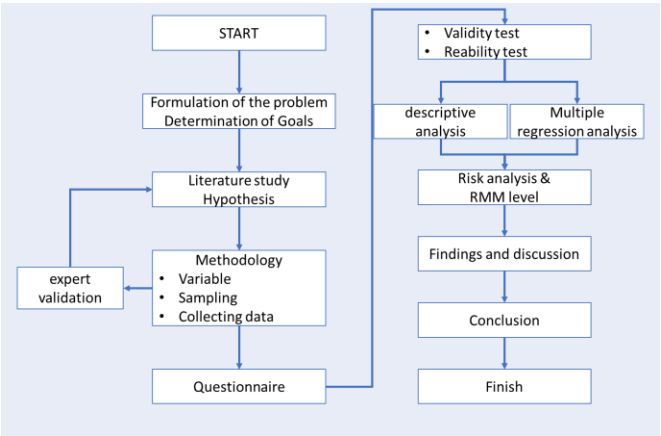

Figure 3. Methodology.

2.2. Method

The research using Descriptive and AHP analytics obtained High Risk level category in the risk of control of Design, Work Implementation and Weather Influence, While the evaluation criterion of Enterprise Risk Maturity obtained the assessment of maturity level 4 that is good which means Supervisory Consultant has been supervised system to implementation of risk management, prism has been carried out and accompanied by periodic improvements in terms of control.

2.3. Design of research models

From the collected data, a relationship between risk management will be prepared based on quality performance and time performance by the Supervising Consultant that occurs during the building construction work with the risk management maturity level of the Supervising Consultant. The relationship model can be seen in the Figure 4.

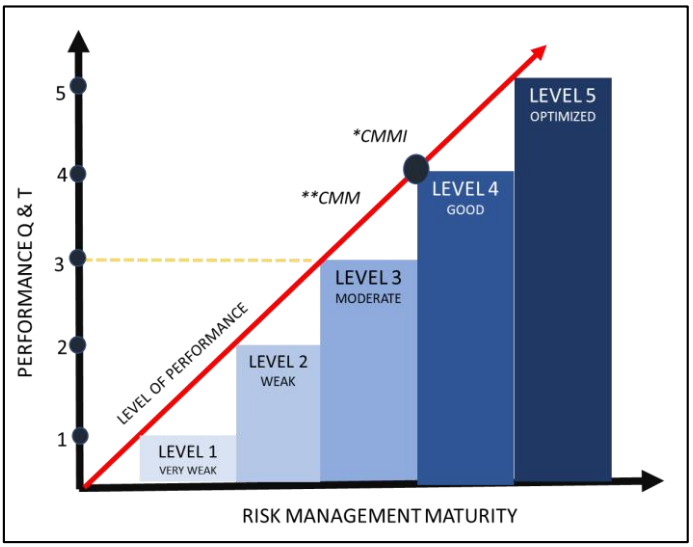

Figure 4. The relationship model.

3. Results discussion

3.1. High risk category quality performance

The results of this research analysis show that the risks that have an impact as long as the building construction work related to the quality risk are: (Table 1)

- No design coordination (structural, mechanical, electrical, etc.)
- Slow creation of Shop drawings

Table 1. High risk category quality performance.

No.	Var	Component	Risk Activity	Risk category
1	Q24	Design	No design coordination	High
2	Q31	Administration	Slow creation of Shop drawings	High

No design coordination means that there is a mismatch between shop drawings with detailed drawing or mismatch between of each job drawing. Suppose that in making a structural drawing that often uses the basis of a wrong revised architectural drawing because it often changes, so often there is no match between the shop drawing and the structural drawing or mechanical & electrical (ME) drawing.

Some of the main causes of document design problems are [9]:

- Lack of communication

- Lack of technical knowledge from planning consultants
- Lack of confidence from the consultant planner in planning a project
- Lack of cooperation from the design team

The slow creation of Shop drawings is a series of risk factors of no design coordination. The imperfections of the planner drawings resulted in the lack of courage of the contractor in making shop drawing. So the contractor must create a new drawing as a result of the contractor team's idea. In addition to these problems the fundamental problem with the slow making of shop drawing is the lack of technical staff who can make shop drawing.

3.2. High risk category time performance

Table 2. High risk category time performance.

No.	Var	Component	Risk Activity	Risk category
1	T6	Project Management	Lack of control over work schedule	High
2	T27	Environment	Effect of weather on construction activities	High
3	T30	Design	A change in design can result in a delay in project performance	High
4	T34	Design	Incorrect or incomplete design (e.g. design does not include electricity and water availability so the building does not function after completion)	High

Control of the work schedule is the responsibility of the Supervising Consultant in achieving work time. Field dynamics often become obstacles in achieving the set time. The dynamics of the field could be due to mistakes from the work owner in terms of changes in work or from the executor of his own work in determining work methods and the availability of tools, material, labor and financial support.

The causes of delays in project implementation can be categorized into 3 major category, namely [10]:

- Compensable Delay, delays caused by actions, negligence, or errors of the contractor.
- Non-Excusesable Delay, which is a delay caused by the project owner's actions, negligence or errors.
- Excusable Delay, namely delays caused by events outside the control of both the owner and the contractor.

3.3. Indicator maturity level 4

Based on the analysis, the level of Risk Management Maturity Model Supervisory Consultant in Building Construction Works is level 4 (Good), this means that the Supervisory Consultant has a monitoring system for the implementation of risk management, the principles have been implemented and accompanied by periodic improvements.

In level 4 maturity in Coso Monitoring Guidance, 2009 defines its maturity indicators as follows:

Documentation	:	Comprehensive and consistent
Awareness and Understanding	:	Training has been comprehensive and related to control issues
Attitude	:	Control process part of the strategy
Control Procedures	:	Formal and standardized
Monitoring	:	It has started periodically

4. Conclusion

Research that uses AHP analysis gets high risk categories in the control risk of design results, work performance and weather effects, while the Enterprise Risk Maturity criteria assessors obtain maturity level 4 (good) evaluation, which means that the Supervising Consultant has a monitoring system for risk management implementation, the principle have been executed and accompanied by periodic repairs in terms of control.

4.1. The quality risks are

- Design coordination (structural, mechanical, electrical, etc.) (Q 24).
- Slow manufacturing of Shop drawings (Q 31).

4.2. While time risk is

- Lack of control over work schedule (T 6).
- Effects of weather on construction activities (T 27).
- The existence of design changes can result in hampered project performance (T 30).
- Design is incorrect or incomplete (e.g. design does not include electricity and water availability so the building does not function after completion) (T 34).

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