

RISK MANAGEMENT STRATEGIES ON HIGH-RISE BUILDING PROJECTS IN THE INDONESIAN CONSTRUCTION INDUSTRY**Faizal Addin Achmad**

Program Studi Teknik Sipil, Universitas Krisnadwipayana

*Korespondensi email : ujangwar@gmail.com**ABSTRACT**

The high-rise building construction industry in Indonesia faces technical and non-technical risks such as work safety, delays, cost overruns, and contract conflicts. This research examines risk management strategies in high-rise building projects with reference to ISO 31000 in the BTN Bank Building project in the Kelapa Gading area of North Jakarta, through literature studies and analysis of actual project cases in Indonesia. The results show that the initial stages of risk management have been implemented, but full implementation is still not optimal. The main risks include delays in material supply, work accidents, and limited human resources risk experts. Mitigation strategies implemented include avoidance, risk transfer, and impact reduction. The main barriers are reactive organizational culture, lack of documentation, and limited management support. This research recommends the integration of risk management in the project management system and the improvement of HR competencies to increase project success and construction industry efficiency.

Keywords: risk management, construction,**INTRODUCTION**

Indonesia's construction industry is growing rapidly as the need for infrastructure and high-rise buildings increases. The construction of high-rise buildings in big cities is a solution to land limitations, but these projects face complex risks due to their scale and technology. BPJS Ketenagakerjaan data shows an increase in work accidents in the construction sector, from 123,041 cases (2017) to 177,000 cases (2020), illustrating the threat to project safety and continuity. Construction project risks can lead to delays, cost overruns, work accidents, and project failure. Uncertainty factors such as design changes, material price fluctuations, and extreme weather can hinder the achievement of project goals. Without effective risk management, the project risks deviating from the plan and incurring losses. Therefore, risk management is important to identify, analyze, and control uncertainties for project success. ISO 31000 is an international standard for risk management that provides guiding principles, frameworks, and systematic processes that can be applied to a variety of industries, including construction. This standard emphasizes the importance of identification, analysis, risk evaluation, and mitigation measures in project management. The implementation of ISO 31000 is expected to increase the readiness of construction companies to face risks and achieve project goals. However, implementation in the field has not been optimal, such as in building projects

LITERATURE REVIEW

Risk management in construction is a systematic process to control project uncertainties and minimize their negative impacts. Risks in building projects include constraints on cost, time, quality, and OHS. PMBOK and ISO 31000:2018 emphasize that risk management should

be an integral part of project management from the planning to the operation stage. ISO 31000:2018 provides a flexible framework for organizations to integrate risk management into their business processes. The standard is not a certification, but offers best practice guidance for organizations to adapt to their context (ISO, 2018). The ISO 31000 framework follows the Plan-Do-Check-Act (PDCA) concept, including the components: management commitment (risk policy), planning (risk management framework design), implementation, evaluation, and continuous improvement. The core of ISO 31000 lies in the risk management process, which consists of the stages:

- 1) Communication and consultation,
- 2) Establishment of context,
- 3) Risk assessment - includes identification, analysis, and evaluation of risks
- 4) Risk treatment,
- 5) Monitoring and review.

The formulation of the problem in this study is how to implement risk management strategies based on ISO 31000 in high-rise building projects in Indonesia for effective risk management. This article aims to provide an overview of high-rise construction risk management and integrative implementation strategies, focusing on the ISO 31000 risk management process-identification, analysis, evaluation, and risk mitigation. The article also discusses the implementation of risk management in the Indonesian construction industry, barriers, opportunities for improvement, and comparisons of national and international practices, and provides recommendations for improving risk management. Hopefully, this article will be useful for academics and practitioners to improve the performance of high-rise building projects.

RESEARCH METHODS

Risk measurement at this stage uses quantitative analysis. Quantitative analysis is carried out based on a ratio scale to describe the probability and impact of the risk. The data needed at the risk analysis stage is obtained using the distribution of questionnaires to all BTN Bank Building projects in the Kelapa Gading area, North Jakarta to find the weighted value of the probability and impact of risks.

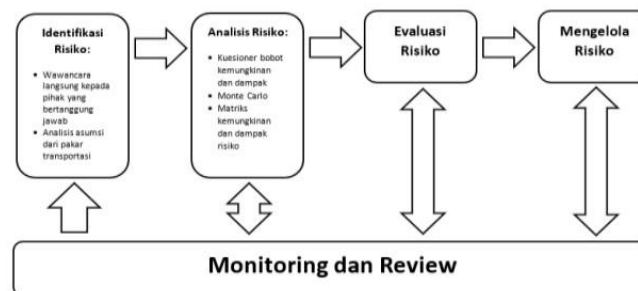


Figure 1. Risk Management Process

After the risks are mapped into the likelihood and impact matrix, the management of these risks is then carried out so that a risk management strategy is obtained. In more detail the steps of the risk handling process can be made, then the strategies recommended by ISO 31000 Risk Management are as follows:

- 1) Avoid risk (risk avoidance);
- 2) Risk mitigation (risk reduction), can be done by reducing the possibility or impact;

3) Transfer risk to a third party (risk sharing);

4) Accept risk (risk acceptance).

This is necessary to ensure that the implementation of risk management has run in accordance with the planning carried out.

RESULTS AND DISCUSSION

Once the risks have been evaluated and selected for follow-up, the project team develops a risk mitigation strategy (risk treatment) to address the prioritized risks. ISO 31000 and the risk management literature in general mention four basic strategies, or often abbreviated as 4T, namely:

1) Terminate (Avoid) - avoid the risk;

2) Treat (Mitigate/Reduce) - reduce the likelihood or impact;

3) Transfer - transferring the risk to another party;

4) Tolerate (Accept) - accept the risk.

In multi-storey building construction projects, the application of these strategies needs to be adapted to the context of each risk:

1) Avoidance.

Done if the risk is considered too dangerous or detrimental so it should be avoided by changing the plan. Example: If the analysis shows that a certain construction method has a high risk of causing accidents, the contractor can avoid the risk by changing the work method or postponing the work until safer conditions (e.g. postponing elevation work during bad weather);

2) Reducing risk (mitigation / reduction).

Carried out by actions that reduce the probability of occurrence or reduce the impact of losses if the risk occurs. For example, the risk of worker accidents is reduced by tightening OHS procedures, providing safety training, and providing complete PPE. The risk of delays can be reduced by increasing the number of workers or overtime (to increase the probability of the project being completed on time) and preparing an acceleration plan. In essence, this strategy tries to control the causal factors or minimize the impact of risks proactively;

3) Transferring risk (transfer).

This means transferring the financial consequences of the risk to another party who is willing to bear it, usually through a contract or insurance mechanism. In high-rise projects, an example of risk transfer is the purchase of construction insurance (contractor's all-risk insurance) to cover losses due to natural disasters or major accidents. In addition, contractors can transfer specific risks to specialized sub-contractors; for example, high-risk bore pile foundation work is transferred to a specialized sub-contractor, so that the technical risk is borne by that party (under the terms of the contract). The transfer strategy does not eliminate the risk, but transfers the financial impact;

4) Acceptance.

Performed for risks that are low-level or not economically feasible to address specifically. The project team is aware of the risk and prepares a contingency plan if necessary, but does not take active mitigation measures because the cost or effort of mitigation is not worth the impact. For example, the risk of light rain on roofing works may be accepted with the consequence of slight rescheduling, but not avoided because it is considered minor.

CONCLUSION

Construction companies and relevant stakeholders are advised to integrate risk management into the overall project management system. This includes drafting company risk policies, continuous training, using software and improving work contracts. Governments and associations also have important roles to play, such as requiring risk management plans in bidding documents for large projects or providing incentives (point scoring) for contractors with certified risk management systems. At the project level, project managers should be proactive in leading risk identification from the planning stage and ensure risk monitoring is a regular agenda. With these strategic steps, it is expected that risk management in accordance with ISO 31000 can be implemented more widely and effectively in high-rise building projects in Indonesia. As a result, the national construction industry will be able to complete projects more successfully, safely and sustainably, in line with international best practices. A well-thought-out risk management implementation is not an additional cost, but an investment to prevent much bigger losses in the future. Like the saying “prepare an umbrella before it rains”, risk management is the umbrella that protects construction projects from the storm of uncertainty, ensuring the achievement of development goals with controlled risks.

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