

**PROJECT RISK MANAGEMENT IN SECTOR PUBLIC
(Lessons Learned from Indonesia)**

Aisyah Almira^{1*}, Nurkholis², Sari Atmini³

¹⁻³ Faculty of Economics and Business, Universitas Brawijaya,

E-mail: ¹⁾ aisyahamira@student.ub.ac.id

Abstract

This study examines the implementation of risk management in public sector infrastructure projects in Indonesia funded by the APBN. Using a qualitative approach and case study method, data were collected through in-depth interviews with stakeholders such as risk managers and risk management teams. The findings indicate that the main risks include land acquisition, design, contractual, and completion time risks. Although risk management is applied at every stage, the lack of documentation hampers the evaluation of its effectiveness. The guidelines provided by the Ministry of Public Works and Housing help accommodate the primary risks but require further adjustments. The urgency of implementing risk management is high to prevent delays and cost overruns. It is recommended to develop specific guidelines, enhance documentation, and conduct continuous training and active collaboration among stakeholders to improve risk management effectiveness and ensure the success of infrastructure projects.

Keywords: Risk, Project Risk Management, APBN Funding, PPP, Lessons Learned

1. INTRODUCTION

Risk management (RM) is a critical element in the governance of both corporate and public sector organizations. RM plays a crucial role in ensuring the achievement of organizational goals through the identification, assessment, and management of risks that could hinder these goals. Fundamentally, RM is not merely about eliminating existing risks but rather about managing risks effectively by considering whether to accept, avoid, or mitigate them (Bracci et al., 2022; Ludmilla, 2023).

In the context of construction projects, risks are inevitable. Construction projects, whether innovative or not, are always faced with various risks ranging from technical to non-technical factors influenced by numerous external elements. Okate and Rodney et al. have pointed out that construction projects face significant risks due to the involvement of multiple parties, such as project owners, planners, supervision consultants, contractors, subcontractors, suppliers, and bureaucratic entities (Okate & Kakade, 2019; Wilson, 2021). With so many stakeholders involved, risk identification and management become essential to ensure the project proceeds as planned and to avoid potential losses.

Indonesia, as a developing country, is vigorously pursuing infrastructure development to meet the needs and improve the welfare of its people. According to data from the Ministry of Finance, the Ministry of Public Works and Housing (PUPR) receives substantial budget allocations from the State Budget (APBN), making it one of the top ten ministries with the largest budgets (RPJMN 2020-2024). This budget allocation aligns with the president's vision and mission outlined in the National Medium-Term Development Plan (RPJMN) 2020-2024, which focuses on the welfare of the people and sustainable economic development. For instance, road infrastructure is a critical

economic infrastructure that facilitates connectivity and supports various economic activities.

In implementing infrastructure projects in the public sector, particularly those funded by APBN, risk management is often neglected or poorly documented. This is due to several factors, including the lack of specific guidelines on project risk management, the perception that financial risk is not a primary issue since the budget is entirely government-funded, and the lack of awareness of the importance of documenting risk management (El-Sayegh & Mansour, 2015).

The main goals of this study are to find out the risks involved in infrastructure projects funded by the government, to assess how well risk management is being done in these projects, and to suggest ways to improve risk management in the public sector, especially for government-funded projects. This study is important because it can help increase our knowledge of risk management, particularly in government projects. The results could also be used by the government to improve risk management in infrastructure projects and help achieve development goals more effectively.

2. RESEARCH METHODS

This study employs a qualitative approach using a case study method. This approach is chosen because it allows the researcher to explore and uncover the meaning of real-life phenomena in-depth and contextually. Case studies are particularly suitable for answering specific research questions and describing complex situations where the evaluated interventions do not have clear and singular outcomes (Ridder, 2017; Yin, 2018). The research design comprises several key stages: data collection, data analysis, and interpretation of findings. Each stage is conducted meticulously to ensure the validity and reliability of the research findings.

Data collection involves both primary and secondary sources. Primary data collection was conducted through in-depth interviews with various informants associated with APBN-funded infrastructure projects. These interviews were designed to explore the informants' views, attitudes, beliefs, and experiences related to risk management in these projects. Informants included risk owners, risk managers, pioneering resources, and risk management team members. Semi-structured interviews were employed, allowing the researcher to explore topics more flexibly and in-depth. The interview questions were adapted from a previous questionnaire developed by Alijoyo (2021) and tailored to obtain more detailed and relevant data for this study (Bougie & Sekaran, 2019; Mazhar et al., 2021).

Secondary data refers to information previously collected by other parties or obtained from written sources. The secondary data used in this study includes risk register documents within the ministry, project planning documents, the Ministry of PUPR's 2020-2024 Strategic Plan, project implementation reports, the 2020-2023 Internal Control System Report (SPIP), and performance reports up to 2023. These secondary data sources were used to support and complement the primary data obtained from the interviews (Bougie & Sekaran, 2019; Mazhar et al., 2021).

Data analysis was conducted through an inductive process, where the collected data were analyzed to identify patterns, themes, and key categories. The stages of data analysis

included transcription of interviews, coding, categorization, and interpretation. All interviews were recorded and transcribed verbatim to ensure data accuracy. The transcribed data were coded to identify relevant themes and patterns. Coding was done manually and using qualitative analysis software to enhance efficiency and accuracy. The identified codes were grouped into broader categories, which helped in systematically organizing the research findings. The categorized data were then interpreted to generate key findings, with consideration of the context and relevant literature (Creswell, 2016).

To ensure the validity and reliability of the findings, data triangulation was employed. Triangulation was achieved by comparing and contrasting data obtained from various sources (interviews and documents) and examining the consistency of findings across these sources. Triangulation was also supported by referencing relevant literature to validate the interpretation of the research findings.

Several strategies were implemented to enhance the validity and reliability of the findings, including member checking, peer debriefing, and maintaining an audit trail. Preliminary findings from the interviews were validated by informants to ensure that the researcher's interpretations aligned with their experiences and views. Colleagues were involved to review and provide feedback on the findings and interpretations. Detailed documentation of all research stages, including methodological decisions, data collection procedures, and data analysis processes, was maintained to allow other researchers to follow and verify the research process. By adopting a systematic and comprehensive approach, this study aims to provide valid and in-depth insights into the implementation of risk management in public sector infrastructure projects funded by APBN in Indonesia.

3. RESULTS AND DISCUSSION

Risk management has become a crucial topic in various fields due to its significant role in achieving organizational goals. In the context of infrastructure development in Indonesia, risk management is essential because of the complex nature of projects and the involvement of multiple stakeholders. Infrastructure projects in Indonesia are financed through several sources, including the State Budget (APBN), foreign loans, and partnerships with private entities. Each financing source brings different urgencies and challenges for risk management. This section provides an in-depth analysis of the findings related to risk management practices in APBN-funded infrastructure projects.

3.1. Risk Management in PPP Projects

The high demand for infrastructure does not align with the availability of budgetary funds to support such development. Therefore, the government seeks alternative financing to bridge this budget gap through Public-Private Partnerships (PPP). The basic principle of this partnership is that the government, as the project owner, collaborates with private entities, which act as the builders, with the funding provided by the private sector. As a result of the funds expended, the private entities expect to recoup their investment once the infrastructure becomes operational.

The risks arising from this partnership are allocated according to the authority outlined in the partnership agreement. The benefit for the government from this partnership is the availability of the needed infrastructure while minimizing the budgetary expenditure and risk. For the private entities, the profit derived from the partnership is

obtained through the management of the infrastructure over a specified period as agreed upon in the contract.

Risk management is crucial for both the government, as the project owner, and the private entities, as the builders, in the implementation of infrastructure projects through this partnership model (Salim, 2023). For the government, if the project carries significant risk and is unattractive to private entities, it is unlikely to attract interest or be "sold" to the private sector. Similarly, for the private entities, the risk analysis of the project is critical in assessing the potential profitability. If the identified risks in the initial project documentation are substantial, it could be detrimental to the private entities, as the funds used are their own.

Risk management in PPP projects is structured using the risk allocation guidelines issued by PT. PII, which serves as the guarantor unit. These guidelines are designed to provide corridors and highlights on the risks that should be considered and addressed in the risk management process for the provision of infrastructure through government and private sector partnerships. The categories and risk statements that may occur in the implementation of infrastructure are specifically and thoroughly detailed in PT. PII's risk allocation guidelines.

3.1.1. Risk Management in APBN-Funded Projects

APBN-funded infrastructure projects face unique challenges and risks. Effective risk management is essential to ensure projects are completed on time, within budget, and to the required quality standards. However, risk management in these projects is often suboptimal due to various constraints.

3.1.2. Identification of Risks

The main risks identified in APBN-funded infrastructure projects include:

- a. Land Risk
 - a) Clean and Clear Issues: Projects often face issues with land that is not clean and clear, including legal disputes, unclear ownership, or occupation by others.
 - b) Impact: Delays in project timelines and increased operational costs due to legal and land acquisition issues.

- b. Design Risk
 - a) Design Changes: Unplanned design changes may occur due to functional requirements or initial planning errors.
 - b) Impact: Increased costs and extended project timelines.

- c. Construction Risk
 - a) Delays in Completion: Projects frequently experience delays due to various factors such as adverse weather conditions, lack of coordination among stakeholders, or logistical challenges.
 - b) Impact: Project completion delays, leading to cost overruns and failure to meet deadlines.

- d. Contractual Risk

- a) Failure to Fulfill Contractual Obligations: Issues may arise from administrative errors, technical problems, or contractor incapability.
- b) Impact: Penalties, financial losses, and potential litigation.

- e. Health and Safety Risk
 - a) Workplace Accidents: Accidents may occur due to inadequate training, insufficient equipment, or non-compliance with safety procedures.
 - b) Impact: Injuries or fatalities, project delays, and additional costs for compensation and investigations.

3.1.3. Challenges in Risk Management for APBN Projects

Effectively managing risks in APBN-funded infrastructure projects is important for project success. Challenges like inadequate documentation, lack of specific guidelines, misconceptions about financial risks, and limited capacity of human resources hinder risk management.

- a. Lack of Documentation: Despite risk management practices being implemented at various project stages, documentation is often inadequate. Risks identified and mitigation actions taken are not properly recorded, making it difficult to evaluate the effectiveness of risk management and learn from past experiences.
- b. Absence of Specific Guidelines: The lack of specific guidelines for project risk management in the public sector poses a significant challenge. Although the Ministry of Public Works and Housing (PUPR) has general risk management guidelines, these are not tailored specifically for APBN-funded projects.
- c. Misconception about Risks: There is a perception that financial risk is not a major issue in APBN-funded projects since the budget is entirely government-funded. This perception leads to insufficient attention to comprehensive risk management.
- d. Capacity and Competency of Human Resources: Insufficient capacity and competency among human resources in managing project risks are also obstacles. Many stakeholders involved in infrastructure projects lack adequate understanding of the importance of risk management and how to implement it effectively.

3.1.4. Recommendations for Improving Risk Management in APBN Projects

Improving risk management in APBN-funded projects is essential for enhancing the effectiveness and success of public infrastructure initiatives. To address the existing challenges, a set of strategic recommendations is necessary.

- a. Enhancing Documentation: There is a need for a better documentation system to record all identified risks and mitigation actions. This will facilitate the evaluation and improvement of risk management processes.
- b. Developing Specific Guidelines: Specific guidelines for risk management in public sector projects, particularly those funded by APBN, should be developed. These guidelines should be based on international standards such as ISO 31000:2018 and tailored to local needs.
- c. Training and Awareness: Increasing awareness and capacity building through continuous training on the importance of risk management and how to implement

- it effectively. Training should cover risk identification techniques, risk analysis, and the development of mitigation plans.
- d. **Supervision and Evaluation:** Enhancing supervision and evaluation of risk management practices to ensure that all necessary steps have been taken and risks are managed effectively. Effective supervision will help in detecting and addressing issues early before they escalate.
 - e. **Collaboration and Stakeholder Engagement:** Encouraging collaboration among all parties involved in the project, including government, contractors, consultants, and the community. Active engagement of all stakeholders will help in comprehensive risk identification and mitigation.

4. CONCLUSION

The study of risk management in public sector infrastructure projects in Indonesia, specifically those funded by the State Budget (APBN) and Public-Private Partnerships (PPP), reveals several key insights and challenges. The conclusions drawn from this research highlight the importance of effective risk management practices to ensure the successful implementation of infrastructure projects.

APBN-funded infrastructure projects face significant risks that need to be managed effectively, including land acquisition risks, design risks, contractual risks, and completion time risks. Although risk management practices are informally implemented at each project stage, the lack of proper documentation hinders the evaluation of their effectiveness. The Ministry of Public Works and Housing (PUPR) has implemented risk management guidelines, but these are often not specific enough to address the unique challenges of individual projects. There is a need for more detailed documentation and the development of specific guidelines that adhere to international standards such as ISO 31000:2018, tailored to local requirements.

Although project risk management for APBN-funded infrastructure cannot be the primary basis for decision-making or policy formulation regarding whether to implement or not implement an infrastructure project, it can serve as a critical consideration for issues that may arise during the construction process. Therefore, project risk management for APBN-funded projects remains essential to be conducted.

In PPP projects, risks are shared between the government and private entities based on the terms of the partnership agreement. These projects involve various risks, including location risks, environmental risks, design risks, construction risks, health and safety risks, and contractual risks. The primary advantage for the government is the availability of necessary infrastructure with minimized budget and risk, while private entities benefit from the potential profits derived from managing the infrastructure over a specified period.

Effective risk management is crucial for both the government and private entities. If a project has high risks and is unattractive to private entities, it is unlikely to gain interest or investment. Similarly, private entities conduct thorough risk analyses to assess profitability. The guidelines issued by PT. PII, which serves as the guarantor unit, provide a framework for risk allocation and highlight the risks that should be considered in the risk management process.

Enhancing documentation is essential to record all identified risks and mitigation measures, facilitating the evaluation and improvement of risk management processes. Specific guidelines for risk management in public sector projects, especially those funded by APBN and PPP, should be developed. These guidelines must align with international standards like ISO 31000:2018 and be adapted to local contexts. Continuous training and capacity building for all stakeholders on the importance of risk management and its effective implementation are crucial.

This training should cover risk identification techniques, risk analysis, and the development of mitigation plans. Enhanced supervision and evaluation of risk management practices are necessary to ensure that all required steps are taken and that risks are managed effectively. Effective supervision will help in early detection and resolution of issues before they escalate. Promoting active collaboration among all stakeholders, including government agencies, contractors, consultants, and the community, is vital for comprehensive risk identification and management. Regular communication and coordination will help address potential issues proactively and ensure smooth project implementation.

By implementing these recommendations, risk management in public sector infrastructure projects can be significantly improved, supporting the achievement of development goals and reducing potential losses.

REFERENCES

- Alijoyo, A. (2021). Risk management implementation in public sector organizations: A case study of Indonesia. *Organizational Cultures*, 22(1), 1.
- Bougie, R., & Sekaran, U. (2019). *Research methods for business: A skill building approach*. John Wiley & Sons.
- Bracci, E., Mouhcine, T., Rana, T., & Wickramasinghe, D. (2022). Risk management and management accounting control systems in public sector organizations: a systematic literature review. *Public Money & Management*, 42(6), 395–402.
- Creswell, J. W. (2016). *Research Design : Pendekatan Metode Kualitatif, Kuantitatif dan Campuran*. Edisi Keempat (Cetakan Kesatu). Yogyakarta : Pustaka pelajar. In *Angewandte Chemie International Edition*, 6(11), 951–952.
- El-Sayegh, S. M., & Mansour, M. H. (2015). Risk assessment and allocation in highway construction projects in the UAE. *Journal of Management in Engineering*, 31(6), 4015004.
- Ludmilla, R. (2023). Penerapan Manajemen Risiko dalam Pemerintahan Negara-Negara di Asia. *COMSERVA: Jurnal Penelitian Dan Pengabdian Masyarakat*, 2(11), 2487–2501.
- Mazhar, S. A., Anjum, R., Anwar, A. I., & Khan, A. A. (2021). Methods of data collection: A fundamental tool of research. *Journal of Integrated Community Health (ISSN 2319-9113)*, 10(1), 6–10.
- Okate, A., & Kakade, V. (2019). Risk management in road construction projects: High volume roads. *Proceedings of Sustainable Infrastructure Development & Management (SIDM)*.
- Ridder, H.-G. (2017). The theory contribution of case study research designs. *Business*

Research, 10, 281–305.

- Salim, S. (2023). Promoting Firm Performance via Board of Directors Effectiveness: A Study of Financial Services Companies in New Orleans. *Journal Of Management, Accounting, General Finance And International Economic Issues*, 3(1), 16–31. <https://doi.org/10.55047/marginal.v3i1.848>
- Wilson, R. (2021). Risk management and risk sharing in Islamic finance: Theory and practice. In *Contemporary Issues in Islamic Social Finance* (pp. 36–54). Routledge.
- Yin, R. K. (2018). *Case study research and applications* (Vol. 6). Sage Thousand Oaks, CA.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).