



Analysis of Factors Causing Delays in Construction Projects in Balikpapan from the Project Management Perspective

Dwi Aneka Kartini^{1*}, Afif Taufiiqul Hakim², dan Muhammad Huzair T³

^{1,2,3}Program Studi Teknik Sipil, Institut Teknologi Kalimantan

Jl. Soekarno Hatta No. KM 15, Karang Joang, Kec. Balikpapan Utara, Kota Balikpapan, Kalimantan Timur

*Corresponding Author : dwi.kartini@lecturer.itk.ac.id

Abstract

Construction projects in Balikpapan face various challenges that hinder timely progress. This study aims to analyze the factors causing delays in construction projects in the area from a project management perspective. Based on data collected from various construction projects in Balikpapan, it was found that the main factors causing delays include planning errors, delays in material delivery, design changes, and lack of coordination among teams. The research method used was a questionnaire distributed to project managers and construction teams. Data analysis was performed using descriptive statistics to identify the dominant factors affecting project delays. The results show that poor time management and inadequate planning are the two most dominant factors causing delays. This study provides valuable insights for industry stakeholders in Balikpapan to improve managerial processes and enhance the efficiency of construction project execution.

Keywords: Project delays, project management, construction, planning, coordination..

INTRODUCTION

Construction projects in Balikpapan, one of the rapidly developing cities in East Kalimantan, play an important role in supporting infrastructure development. Although the demand for construction projects continues to rise with economic growth, these projects often face delays that can affect budgets, quality, and project sustainability. Delays in construction projects can be caused by a variety of internal and external factors.

Previous studies have shown that construction project delays are often due to poor planning, inadequate material management, poor coordination among various parties involved, and external factors such as weather and untimely permits. However, most previous studies have focused on construction projects outside of Kalimantan, with limited research on the causes of delays specifically in Balikpapan.

This study aims to provide a clearer understanding of the factors causing delays in construction projects in Balikpapan and offer recommendations to reduce the frequent delays. This research adds value by providing insights related to project management in a developing region, focusing more on the local context.

The primary objective of this research is to analyze the factors causing delays in construction projects in Balikpapan and provide recommendations for improving project management. Thus, this study is expected to contribute to efforts to improve managerial effectiveness in the construction field.



METHODOLOGY

This study uses a quantitative approach with a survey design to identify the factors causing delays in construction projects. Data was collected through a questionnaire distributed to 60 project managers and construction team members involved in construction projects in Balikpapan. The questionnaire contained questions related to factors influencing project delays, such as planning, material management, team coordination, design changes, and other external factors. The type of data used in this research is primary data, collected directly from respondents involved in construction projects. The data obtained was then analyzed using descriptive statistics to identify the dominant factors causing delays. In addition, regression analysis was used to evaluate the relationship between the identified factors and project delays.

Analysis Model:

To analyze the data, linear regression analysis was used to measure the impact of each factor on project delays. The formula used is as follows:

$$\text{Delay} = \beta_0 + \beta_1 \cdot \text{Planning} + \beta_2 \cdot \text{Coordination} + \beta_3 \cdot \text{Material} + \beta_4 \cdot \text{Design Change} + \epsilon \dots \dots \dots \quad (1)$$

Where:

1. Delay is the dependent variable that measures the length of project delay.
2. β_0 is the constant.
3. $\beta_1, \beta_2, \beta_3, \beta_4$ are the regression coefficients for the independent variables consisting of planning, coordination, material management, and design changes.
4. ϵ is the error term of the model.

RESULTS AND DISCUSSION

Factors Causing Delays

Based on the data analysis, five main factors were identified as the causes of delays in construction projects in Balikpapan. These factors are:

1. Poor Planning (75%): The majority of projects experienced delays due to inadequate planning. This includes problems with project scheduling, unrealistic budget estimates, and discrepancies between plans and field execution.
2. Delayed Material Delivery (68%): Construction projects are often delayed by material delivery issues. The cause is the reliance on local suppliers who frequently face logistics problems or shortages of the necessary materials.
3. Design Changes (55%): Approximately 55% of the projects experienced delays due to design changes made during the construction process. Unplanned design modifications lead to significant adjustments in both time and cost.
4. Poor Team Coordination (63%): Coordination issues between various teams, such as contractors, project managers, and field workers, often lead to mistakes in task implementation and delays.
5. External Factors (40%): External factors such as adverse weather, uncertainty in obtaining permits, and environmental issues also have a significant impact on the project schedule.



Universal Journal of Science and Technology

Vol. 4 No. 3 (October 2025)

Below is **Table 1** showing the percentage of factors causing delays:

Tabel 1.

Percentage of Factors Causing Delays in Construction Projects in Balikpapan

Factor Causing Delays	Percentage (%)
Poor Planning	75%
Delayed Material Delivery	68%
Design Changes	55%
Poor Team Coordination	63%
External Factors (Weather, Permits)	40%

Source: Processed Data (2025)

Below is **Figure 1** showing the influence of these identified factors on project delays:

Impact of Factors Causing Delays on Project Timeline

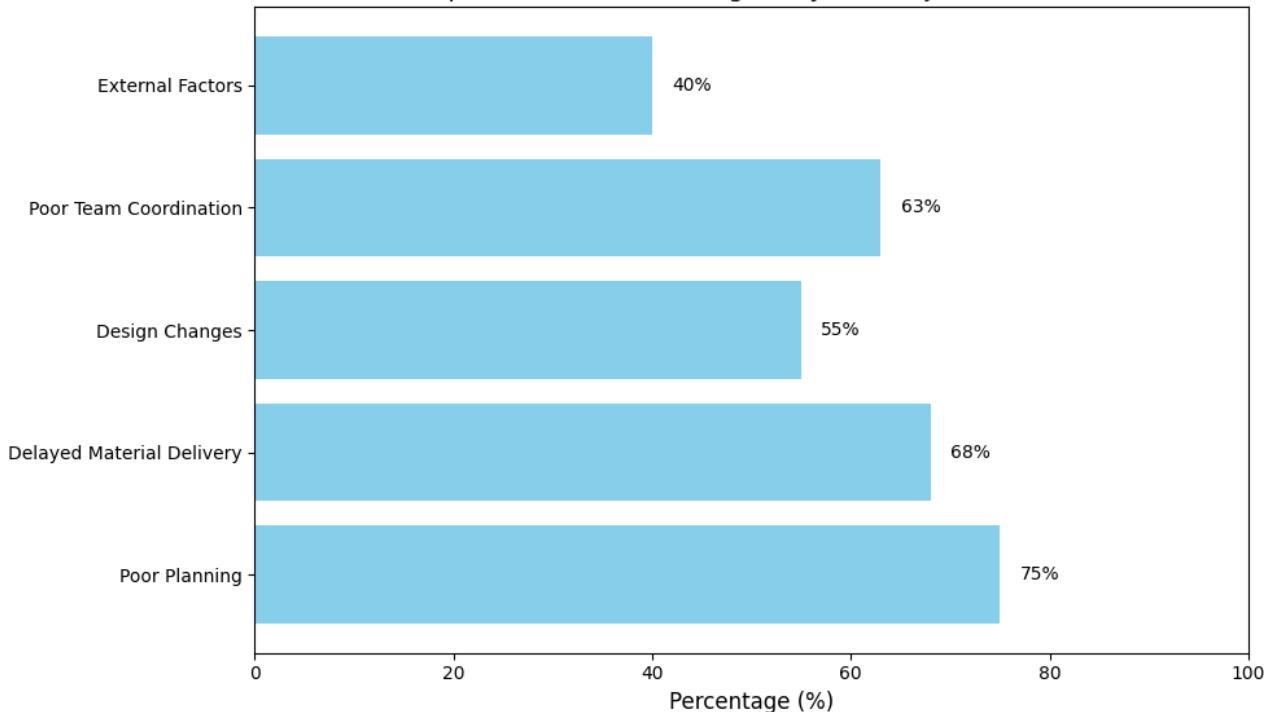


Figure 1
Impact of Factors Causing Delays on Project Timeline
Source: Processed Data (2025)

CONCLUSION

This study found that the delays in construction projects in Balikpapan are caused by several main factors, including poor planning, delayed material delivery, design changes, poor coordination among teams, and external factors such as weather and permits. Among these factors, poor planning and lack of coordination between teams are the most dominant.



Based on these findings, it is recommended that the parties involved in construction projects focus more on detailed and realistic planning, including time estimates, material management, and team coordination. The use of advanced project management technologies and a tighter supervision system for material delivery can also help reduce the potential for delays.

Recommendations:

1. Project managers should focus on more detailed and realistic planning.
2. Material management and logistics should be improved by establishing stronger partnerships with reliable suppliers.
3. Coordination among teams should be improved using better communication technology and project management tools.
4. The local government should expedite the permit process for construction projects in Balikpapan to avoid additional delays.

REFERENCES

Harlow, H.F. (1958). Biological and biochemical basis of behavior. In D.C. Spencer (Ed.), *Symposium on interdisciplinary research* (pp. 239-252). Madison: University of Wisconsin Press.

Mellers, B.A. (2000). Choice and the relative pleasure of consequences. *Psychological Bulletin*, 50(2), 49-52.

Schafer, J.L., & Kang, J. (2008). Average causal effects from nonrandomized studies: A practical guide and simulated example. *Psychological Methods*, 13, 379-313.

Skenderian, J., Siegel, J.T., Crano, W.D., Alvaro, E.E., & Lac, A. (2008). Expectancy change and adolescents' intentions to use marijuana. *Psychology of Addictive Behaviours*, 22, 563-569.

Boussabaine, H.A., & El-Haram, M.A. (2006). *Cost modeling of construction projects*. Oxford: Elsevier.

Kaming, P., & Widjaya, I. (2000). Factors influencing construction project performance in Indonesia. *Journal of Construction Engineering and Management*, 126(5), 348-353.

O'Brien, J.J., & Plotnick, F.D. (2009). *Construction project management: A practical guide to field construction management* (7th ed.). New York: McGraw-Hill.

Flyvbjerg, B., & Coussens, T. (2004). *The economics of project delays in the construction industry: Project management success and failure*. Cambridge University Press.

Walker, A. (2015). *Project management in construction* (6th ed.). Oxford: Blackwell Publishing.

Lovell, J., & Watson, W. (2011). An examination of project failure factors in construction. *International Journal of Project Management*, 29(3), 275-283.

Chan, D.W.M., & Kumaraswamy, M.M. (2002). A comparative study of causes of time overruns in construction projects in Hong Kong. *International Journal of Project Management*, 20(6), 425-433.

Muntner, P., He, J., Cutler, J.A., Wildman, R.P., & Whelton, P.L. (2004). Trends in blood pressure among children and adolescents. *Journal of the American Medical Association (JAMA)*, 291(17), 2110-2111.

JICA (2013). *The study on improvement of construction project management in Indonesia*. Jakarta: Japan International Cooperation Agency.

U.S. Department of Education, Office of Innovation and Improvement. (2004). Innovations in education: Alternative routes to teacher certification (pp. 2-3). Washington, D.C.: Education Publication Center.