OPTIMALISASI SUMBER DAYA MANUSIA DAN PENGAPLIKASIAN BUILDING INFORMATION MODELING (BIM) 5D PADA PROYEK KONSTRUKSI GEDUNG MANDIRI AREA TASIKMALAYA

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ABSTRACT

Research on construction project efficiency continues to evolve along with the increasing complexity of projects and the need for more accurate cost management and workforce planning. In this context, efficiency improvement is pursued through the optimization of human resources and the application of Building Information Modeling (BIM) 5D in cost estimation and labor planning. The main issue addressed in this study is the inefficiency of cost estimation and workforce allocation that often occurs when using conventional methods. The research focuses on analyzing the Cost Estimate (RAB) for structural and architectural works using Autodesk Revit, evaluating workforce fluctuations based on the existing Bill of Quantity (BoQ), and comparing conventional RAB calculations with BIM 5D as well as workforce allocation after performing resource leveling using Microsoft Project. The study employs a case study approach on the Mandiri Building Project in Tasikmalaya, utilizing project documents such as conventional RAB data and detailed engineering design (DED) drawings. The results show that the implementation of BIM 5D provides more accurate and detailed cost estimations compared to conventional methods, while workforce analysis reveals fluctuations along the critical path that prevent leveling without extending the project duration. Overall, BIM 5D implementation enhances cost accuracy and supports workforce planning; however, adding manpower on the critical path remains the most effective solution. Therefore, it is recommended that BIM 5D be implemented from the planning stage and that future studies expand the analysis to other BIM dimensions, such as clash detection and MEP cost analysis based on AHSP.

***Keywords :** Bill of Quantity, Building Information Modeling (BIM) 5D, Cost Budget Plan, Human Resources, Resource Leveling*