



Methodological Evaluation of Process-Control Systems in Ethiopian Construction Projects: A Randomized Field Trial on Cost-Effectiveness Analysis

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Abstract

The construction sector in Ethiopia has experienced rapid growth but is characterized by inefficiencies and high costs. A randomized controlled trial was conducted to assess the impact of process-control systems on construction project costs. Data were collected from 10 randomly selected projects over two years. The results indicate that process-control systems led to a reduction in project costs by an average of 7.5% with a 95% confidence interval (6.2%–8.8%). Process-control systems significantly improved cost management in Ethiopian construction projects. Implementing and monitoring process-control systems should be prioritised to enhance efficiency and reduce costs. construction project, process-control systems, cost-effectiveness analysis, randomized field trial The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u_i + \text{varepsilon}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Ethiopia, Geographic Information Systems, Quality Management, Project Controls, Randomized Trials, Cost-Benefit Analysis, Supply Chain Management

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