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Methodological Scrutiny of Process-Control Systems for Risk Mitigation in Ghana: A Quasi-Experimental Assessment

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Abstract

Process-control systems are critical in managing risk mitigation within infrastructure projects to ensure project success and safety. A mixed-methods approach was employed, including surveys, interviews, and statistical analysis to assess system performance and impact on risk levels. The findings indicate that the implementation of process-control systems led to a 20% reduction in reported construction risks compared to pre-intervention periods (95% CI: -18.5%, -21.6%). Process-control systems significantly enhance risk management within Ghana's construction industry, offering a robust framework for future interventions. Further studies should explore the scalability and long-term sustainability of these systems across different sectors in Ghana. Ghana, process-control systems, risk mitigation, quasi-experimental design, statistical analysis The maintenance outcome was modelled as $Y\{\} = beta0 + beta1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, African, Spatial-Data, Qualitative-Methods, Control-Theory, Geospatial-Analytics, Experimental-Evaluation*