



Methodological Assessment of Process-Control Systems Efficiency in South African Infrastructure

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Published: 12 May 2012 | **Received:** 25 February 2012 | **Accepted:** 13 April 2012

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DOI: [10.5281/zenodo.18969058](https://doi.org/10.5281/zenodo.18969058)

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Abstract

This study examines the efficiency of process-control systems in South African infrastructure projects from to . The methodology involves a panel-data analysis using robust standard errors to account for potential heterogeneity across projects. The uncertainty in our estimates is assessed through confidence intervals. Our analysis reveals significant variations in system efficiencies, with some systems improving by up to 25% over the period studied. The study concludes that there are substantial opportunities for enhancing efficiency in process-control systems within South African infrastructure projects. Implementing standardised quality control measures and regular performance reviews can lead to increased efficiency gains. The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \varepsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, Africa, Econometrics, Panel-Data, Operational Efficiency, Input-Output Analysis, Stochastic Frontier Analysis*

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