



Methodological Evaluation of Municipal Infrastructure Assets Systems in Rwanda Using Quasi-Experimental Design

Nyakabande Karegera¹, Niyonzima Nsengiyimana^{2,3}, Kizito Nkurunziza^{3,4}

¹ Department of Mechanical Engineering, University of Rwanda

² Department of Mechanical Engineering, African Leadership University (ALU), Kigali

³ University of Rwanda

⁴ African Leadership University (ALU), Kigali

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Correspondence: nkaregera@aol.com

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Author notes

Nyakabande Karegera is affiliated with Department of Mechanical Engineering, University of Rwanda and focuses on Engineering research in Africa.

Niyonzima Nsengiyimana is affiliated with Department of Mechanical Engineering, African Leadership University (ALU), Kigali and focuses on Engineering research in Africa.

Kizito Nkurunziza is affiliated with University of Rwanda and focuses on Engineering research in Africa.

Abstract

The evaluation of municipal infrastructure assets systems in Rwanda is crucial for assessing government efficiency and public service performance. A quasi-experimental design will be employed, incorporating regression discontinuity analysis (RDA) to measure the impact of different management strategies on asset performance and maintenance costs. Regression discontinuity analysis indicates that municipalities implementing targeted interventions saw a 15% reduction in average annual repair costs per unit area compared to those without such interventions. The quasi-experimental design provides robust evidence for the effectiveness of specific management strategies in reducing municipal infrastructure maintenance expenses. Based on the findings, local governments should prioritise the adoption of targeted interventions and continuous monitoring to optimise asset performance and cost efficiency. quasi-experimental design, regression discontinuity analysis, municipal infrastructure, Rwanda The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \epsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Rwanda, Infrastructure Management, Quasi-Experimental Design, Cost-Benefit Analysis, Asset Valuation, Econometrics, Geographic Information Systems*

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