



Structural Integrity Assessment of Aging Infrastructure in Uganda

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Abstract

Ugandan infrastructure, particularly bridges and buildings, is aging due to construction practices from decades ago. A combination of field inspections and finite element modelling (FEM) was employed. FEM models were calibrated using data from previous studies and validated against empirical observations. Field inspection results indicated that approximately 30% of structures have structural deficiencies, with bridges being more susceptible than buildings. The study suggests a need for targeted maintenance programmes to address identified deficiencies in the Ugandan infrastructure sector. A phased approach should be adopted, prioritising high-risk structures and incorporating FEM simulations into regular inspection protocols. The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u + \epsilon$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, Finite Element Analysis, Durability, Retrofitting, Corrosion, Masonry, Prestressed Concrete*

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