



Structural Integrity Assessment of Aging Infrastructure in Uganda

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Abstract

Ugandan infrastructure, including bridges and buildings, is aging due to prolonged use and insufficient maintenance. A mixed-method approach combining quantitative surveys with qualitative interviews was employed to evaluate the condition of structures over five years. The assessment revealed that approximately 60% of bridges and buildings were rated as having moderate to severe structural integrity issues, necessitating immediate repairs or replacements. The findings underscore the critical need for targeted interventions to ensure public safety and sustainable infrastructure in Uganda. Immediate prioritization of maintenance and repair programmes is recommended, along with investment in long-term structural assessment methodologies. structural integrity, aging infrastructure, bridges, buildings, Uganda The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u_i + \epsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *African architecture, structural health monitoring, fatigue crack propagation, finite element analysis, life cycle assessment, geotechnical engineering, sustainability assessment*

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