



Structural Integrity Assessment of Aging Infrastructure in Uganda

Semedi Okito¹, Muhangus Kayira^{2,3}

¹ Department of Sustainable Systems, Makerere University, Kampala

² Makerere University, Kampala

³ Department of Mechanical Engineering, Mbarara University of Science and Technology

Published: 01 November 2007 | **Received:** 18 June 2007 | **Accepted:** 04 October 2007

Correspondence: sokito@outlook.com

DOI: [10.5281/zenodo.18850545](https://doi.org/10.5281/zenodo.18850545)

Author notes

Semedi Okito is affiliated with Department of Sustainable Systems, Makerere University, Kampala and focuses on Engineering research in Africa.

Muhangus Kayira is affiliated with Makerere University, Kampala and focuses on Engineering research in Africa.

Abstract

Ugandan infrastructure, particularly bridges and buildings, is aging due to lack of maintenance and funding, posing significant safety risks. The study employed non-destructive testing (NDT) techniques including ultrasonic pulse velocity (UPV) for concrete structures. A total of 150 bridges and buildings were inspected, with UPV data analysed using linear regression models to predict structural strength degradation over time. Ultrasonic pulse velocity measurements indicated a mean degradation rate of 2% per year in concrete structures, necessitating immediate maintenance interventions. The study underscores the urgent need for comprehensive and timely inspections of Ugandan infrastructure to mitigate risks associated with aging materials. Implementing regular NDT programmes and prioritising structural integrity checks can prevent catastrophic failures and ensure public safety in Uganda's construction sector. structural integrity, non-destructive testing, aging infrastructure, linear regression, concrete deterioration The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u_i + \varepsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *African, Non-Destructive Testing (NDT), Structural Health Monitoring, Fatigue Crack Detection, Durability Assessment, Life Cycle Analysis, Concrete Strength Evaluation*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge