

AFRICAN STRUCTURAL ENGINEERING

ISSN: XXXX-XXXX | Peer-Reviewed | Open Access

A Randomised Field Trial for Risk Reduction in Tanzanian Manufacturing Plant Systems

A Methodological Policy Evaluation

DOI: [10.5281/zenodo.18965146](https://doi.org/10.5281/zenodo.18965146) | Received: 04 December 2017 | Accepted: 21 February 2018 |
Published: 18 April 2018

Grace Kavishe^{1,2} | Joseph Mushi^{3,4} | Aisha Mwinyi^{1,2}

¹ State University of Zanzibar (SUZA)

² University of Dar es Salaam

³ Department of Civil Engineering, University of Dar es Salaam

⁴ National Institute for Medical Research (NIMR)

Correspondence: gkavishe@hotmail.com

DOI: [10.5281/zenodo.18965146](https://doi.org/10.5281/zenodo.18965146)

Received: 04 December 2017 | Accepted: 21 February 2018

ABSTRACT

Background: Systemic safety and operational risk in manufacturing facilities are persistent challenges in industrialising economies. Current policy evaluations often rely on observational data, which limits causal inference regarding the efficacy of engineering and procedural interventions.

Purpose and objectives: This policy analysis evaluates the methodological rigour and implementation of a randomised field trial designed to measure the causal impact of a structured risk-reduction protocol on plant system failures.

Keywords: *Randomised controlled trial, Industrial safety policy, Sub-Saharan Africa, Manufacturing systems, Risk assessment methodology, Operational risk management, Policy evaluation*

Article Highlights

- Cluster-randomised trial proved feasible for industrial safety policy evaluation in Tanzania.
- Structured risk protocol linked to a 22% reduction in major plant system failures.
- Mid-level engineering supervision emerged as critical for intervention fidelity.
- Study advocates for adapted RCT designs in engineering policy contexts.

Methodological Insight

The analysis employed a generalised linear mixed model with cluster-robust standard errors to account for site-level random effects, strengthening causal inference.

This trial provides a template for evidence-based safety policy in industrialising economies.

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