Pan African Journal of Media, Data, and Information Literacy

# Methodological Evaluation of Off-Grid Communities Systems in Ghana Using Quasi-Experimental Design

**Kofi Asare**[1,2], **Ama Gyamfi**[1]

[1] Ghana Institute of Management and Public Administration (GIMPA)

[2] Department of Artificial Intelligence, Food Research Institute (FRI)

**Published:** 25 January 2012 | **Received:** 17 August 2011 | **Accepted:** 29 November 2011

**Correspondence:** kasare@outlook.com

**DOI:** 10.5281/zenodo.18956069

**Author notes**

*Kofi Asare is affiliated with Ghana Institute of Management and Public Administration (GIMPA) and focuses on Computer Science research in Africa.*

*Ama Gyamfi is affiliated with Ghana Institute of Management and Public Administration (GIMPA) and focuses on Computer Science research in Africa.*

## Abstract

This study addresses a current research gap in Computer Science concerning Methodological evaluation of off-grid communities systems in Ghana: quasi-experimental design for measuring efficiency gains in Ghana. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured review of relevant literature was conducted, with thematic synthesis of key findings. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of off-grid communities systems in Ghana: quasi-experimental design for measuring efficiency gains, Ghana, Africa, Computer Science, systematic review This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

**Keywords:** *Geographic, Sub-Saharan, Methodology, Quasi-experiment, Evaluation, Sustainability, Community Systems*