African Logistics and Supply Chain
(Business/Engineering crossover)

Methodological Evaluation of Regional Monitoring Networks in Kenya: A Randomized Field Trial for Risk Reduction

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Abstract

This study evaluates regional monitoring networks in Kenya aimed at reducing logistical risks through a randomized field trial. A randomized field trial was conducted across various regions of Kenya. Data were collected using sensors and surveys to measure logistics performance metrics, including delivery times and cost efficiencies. The analysis revealed a significant improvement ($p < 0.05$) in delivery times by 12% with the monitored networks compared to non-monitored areas, indicating enhanced operational effectiveness. This randomized trial demonstrated that regional monitoring networks can effectively reduce logistical risks and improve performance metrics in Kenya's supply chain environment. Based on these findings, it is recommended that further investment be directed towards expanding the monitored regions to achieve broader risk reduction across Kenya's logistics sector. Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert2^{2}$, with performance evaluated using out-of-sample error.

Keywords: *Kenya, GIS, Randomized Controlled Trial, Monitoring Systems, Spatial Analysis, Geographic Information, Data Collection Methods*

ABSTRACT-ONLY PUBLICATION

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

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