African Logistics and Supply Chain
(Business/Engineering crossover)

Quasi-Experimental Design Replication for Adoption Rate Measurement in Municipal Water Systems in Ghana

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Abstract

The adoption of municipal water systems in Ghana has been studied extensively; however, methodological variations can affect the robustness and generalizability of findings. A quasi-experimental design was employed with data from municipal water systems in Ghana. Random assignment of treatment and control groups was used to measure the effect of system implementation on adoption rates. The replication study found a significant increase in adoption rates ($p < 0.01$) among randomly assigned municipalities, supporting the initial findings but also indicating that certain demographic factors may influence adoption differently. This replication underscores the consistency and reliability of the original results, particularly regarding the role of random assignment in accurately measuring treatment effects. Future studies should consider the inclusion of additional control variables to further refine understanding of adoption dynamics in Ghana's municipal water systems. 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, Evaluation, Randomized, Quantitative, Comparative*

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