



Quasi-Experimental Design Assessment of Water Treatment Facilities in Tanzania: A Methodological Evaluation

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Abstract

Water treatment facilities in Tanzania face challenges related to yield improvement, necessitating a robust methodological evaluation. A quasi-experimental design was employed to assess the impact of various interventions on water yield. The study utilised propensity score matching and difference-in-differences analysis. The analysis revealed a significant positive effect ($p < 0.05$) of improved filtration techniques on water yield improvement in field settings, with an average increase of 12% over baseline conditions. This study provides empirical evidence supporting the use of quasi-experimental designs for evaluating yield improvements in water treatment systems. Future research should explore the scalability and sustainability of these findings across different regions and contexts. quasi-experimental design, water treatment systems, Tanzania, yield improvement
The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \epsilon_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Tanzania, Quasi-Experimental Design, Methodological Evaluation, Water Treatment Systems, Yield Improvement, Randomized Controlled Trial, Sampling Techniques

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