



Methodological Evaluation of Quasi-Experimental Design in Municipal Water Systems in Uganda: A Scoping Review

Mwesigwa Alice^{1,2}, Ssesi Pauline^{3,4}

¹ Department of Advanced Studies, Kampala International University (KIU)

² Kyambogo University, Kampala

³ Department of Interdisciplinary Studies, Kyambogo University, Kampala

⁴ Kampala International University (KIU)

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Correspondence: malice@hotmail.com

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Author notes

Mwesigwa Alice is affiliated with Department of Advanced Studies, Kampala International University (KIU) and focuses on Environmental Science research in Africa.

Ssesi Pauline is affiliated with Department of Interdisciplinary Studies, Kyambogo University, Kampala and focuses on Environmental Science research in Africa.

Abstract

Quasi-experimental designs are increasingly being used in municipal water systems to evaluate efficiency gains without random assignment. A comprehensive search strategy was employed using databases such as PubMed and Scopus. Studies were screened for relevance to municipal water systems and used quasi-experimental designs (e.g., difference-in-differences, interrupted time series). The review identified a trend towards the use of quasi-experimental designs in assessing efficiency gains but noted variability in methodological approaches. While some studies showed promising results, inconsistencies in study design and data collection methods hindered generalizability. Future research should standardise methodologies to ensure robust comparisons across different municipal water systems. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, water management, quasi-experimental, randomized control, impact evaluation, sanitation, econometric methods*

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