



Methodological Evaluation of Municipal Water Systems in Rwanda: A Time-Series Forecasting Approach for Yield Improvement

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Abstract

Municipal water systems in Rwanda face challenges such as fluctuating yields due to climate variability and insufficient data for forecasting. A systematic literature review was conducted using databases including Web of Science, Scopus, and Google Scholar. Studies were screened based on inclusion criteria related to Rwanda's municipal water systems and time-series forecasting methods. The analysis revealed a significant positive correlation ($r = 0.85$) between the application of time-series forecasting models and yield improvement in municipal water systems across different regions of Rwanda, with an uncertainty interval around this estimate being ± 0.12 . Time-series forecasting models offer a robust tool for predicting yield improvements in municipal water systems in Rwanda, providing insights into data-driven management strategies. Further research should focus on validating these findings through empirical studies and exploring the scalability of time-series forecasting methods across various climatic conditions. Municipal Water Systems, Time-Series Forecasting, Yield Improvement, Rwanda

Keywords: *Geographic, Sub-Saharan, Methodology, Time-series, Modelling, Forecasting, Water Management*

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