



Time-Series Forecasting Model for Measuring Adoption Rates of Power-Distribution Equipment in Ghana

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Abstract

The adoption rates of power-distribution equipment in Ghana have been inconsistent over time, leading to inefficiencies and potential failures. A time-series analysis was conducted using an autoregressive integrated moving average (ARIMA) model to forecast future adoption rates. The model incorporates seasonal adjustments and includes historical data from various regions across Ghana. The ARIMA model showed a strong correlation with actual adoption rates, with the coefficient of determination (R^2) for the forecasting period being 0.85, indicating that approximately 85% of the variation in adoption rates could be explained by the model. The time-series forecasting model demonstrated its effectiveness in predicting future adoption trends and can serve as a valuable tool for infrastructure planners in Ghana. Infrastructure managers should use this model to inform decision-making processes, particularly regarding equipment procurement and maintenance schedules. ARIMA, power-distribution equipment, forecasting, adoption rates, Ghana

Keywords: *Sub-Saharan, econometrics, ARIMA, stochastic, diffusion, forecasting, regression*

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