



Forecasting Maintenance Costs in Senegalese Transport Infrastructure: A Time-Series Analysis

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Abstract

The Senegalese transport infrastructure faces significant maintenance challenges due to its rapid growth and diverse geographical conditions. A time-series forecasting model was employed to analyse historical data from Senegalese transport maintenance depots. The model included statistical software for regression analysis and uncertainty quantification through robust standard errors. The forecasted cost-effectiveness of the maintenance systems showed a 15% reduction in predicted costs over a five-year period, indicating improved operational efficiency. This study provides a structured approach to forecasting maintenance costs, contributing to more sustainable and efficient transport infrastructure management in Senegal. Implementing these cost-effective predictions can lead to better resource allocation for critical maintenance projects in Senegalese transportation networks. Senegal, Maintenance Costs, Time-Series Analysis, Forecasting The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u + \epsilon$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Sub-Saharan, African, Senegal, Networks, Economics, Forecasting, Time-Series, Depots

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