Modelling and Forecasting Kenyan GDP Using Autoregressive Integrated Moving Average (ARIMA) Models

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ABSTRACT

My thesis investigates the modelling and forecasting of Kenya's Gross Domestic Product (GDP) using the Autoregressive Integrated Moving Average (ARIMA) model, analyzing annual GDP data from 1960 to 2023. Exploiting the ARIMA methodology, this study identifies ARIMA(1,2,1) as the optimal configuration based on rigorous diagnostic tests which includes the Akaike Information Criterion (AIC) and residual analysis. The AIC score of -100.078 highlights the model's superior fit, while the diagnostic checks confirm white-noise residuals, ensuring reliable forecasts. The findings in this study reveals a steady upward trajectory in Kenya's GDP, aligning with the national Vision 2030 objectives of industrialization and economic modernization.

A key novelty of this research lies in its emphasis on the model's diagnostic robustness and the integration of historical trends to forecast long-term economic growth in a volatile economic environment. While ARIMA excels in short- to medium-term forecasting, the study underscores the need for hybrid models like ARIMA-ANN to address external shocks and non-linear dynamics for enhanced accuracy.

The projected GDP growth trajectory provides actionable insights for policymakers, emphasizing strategic investments in infrastructure, agriculture, and manufacturing to sustain economic resilience. This research offers a foundational framework for informed decision-making, equipping Kenya with critical tools to navigate its financial future.