Analysis on GDP Growth and Gross Savings in Pakistan (1990 to 2020)

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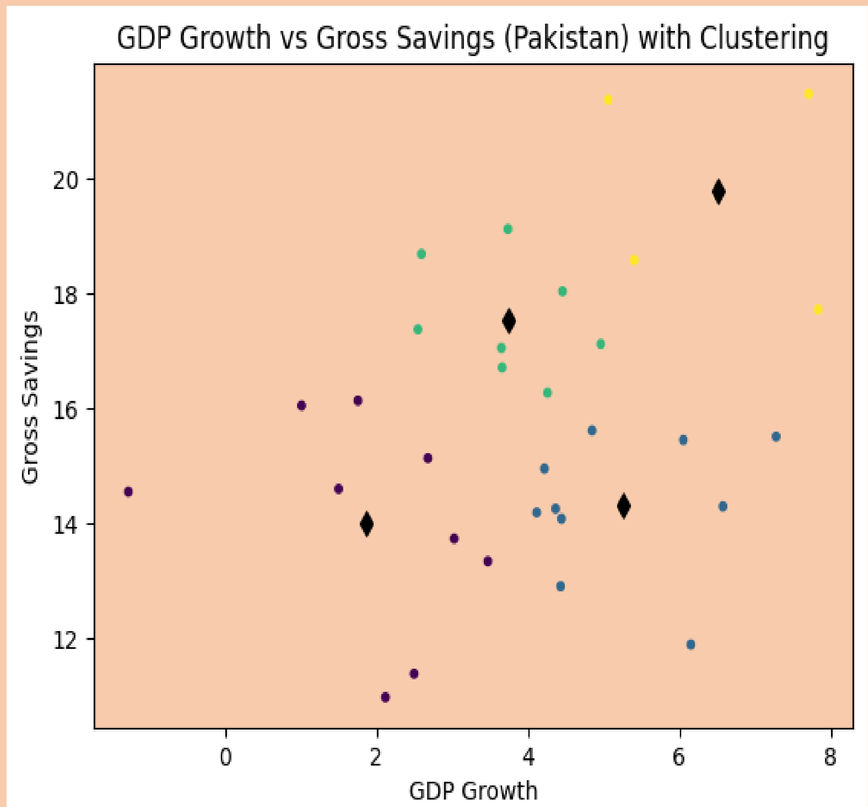
Abstract:

This study examines the historical patterns of GDP growth and gross savings in Pakistan from 1990 to 2020 (Predicted till 2030) using KMeans clustering and curve fitting approaches. While curve fitting offers predictions for the upcoming years, clustering reveals clear patterns. The additional line plot, integrating GDP growth and gross savings with separate y-axes for each variable, provides a comprehensive overview. The poster offers a perceptive examination of economic dynamics and illuminates possible future directions.

Scatter Plot with Clustering

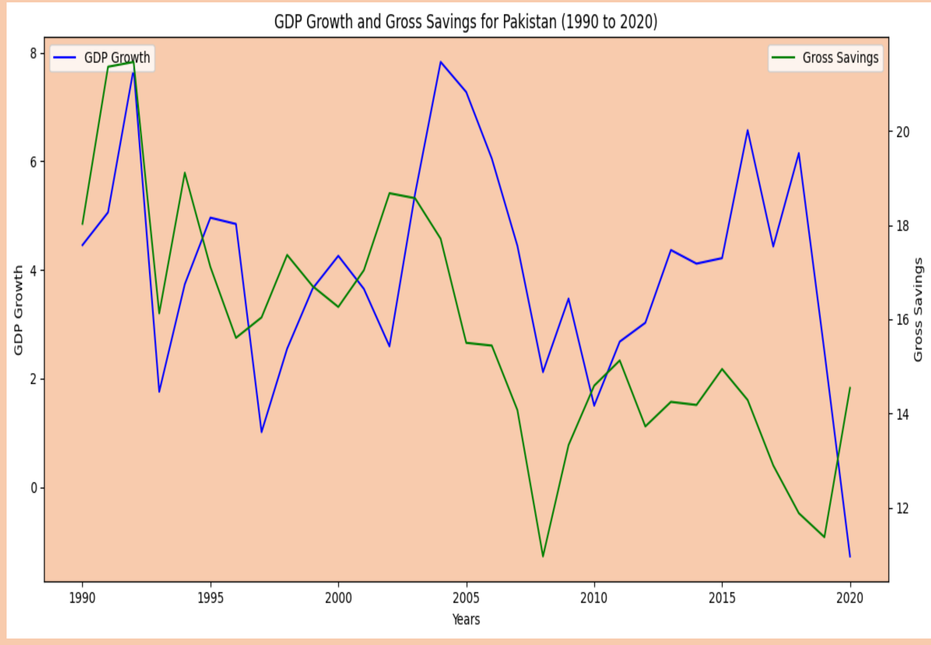
The scatter plot showcases the KMeans clustering results for GDP growth and gross savings in Pakistan from 1990 to 2020. Each point represents a specific year, colored based on the identified cluster. The diamond markers denote cluster centers.
This visual aids in identifying different economic phases and highlights potential outliers or unique periods in Pakistan's economic history.



Introduction:

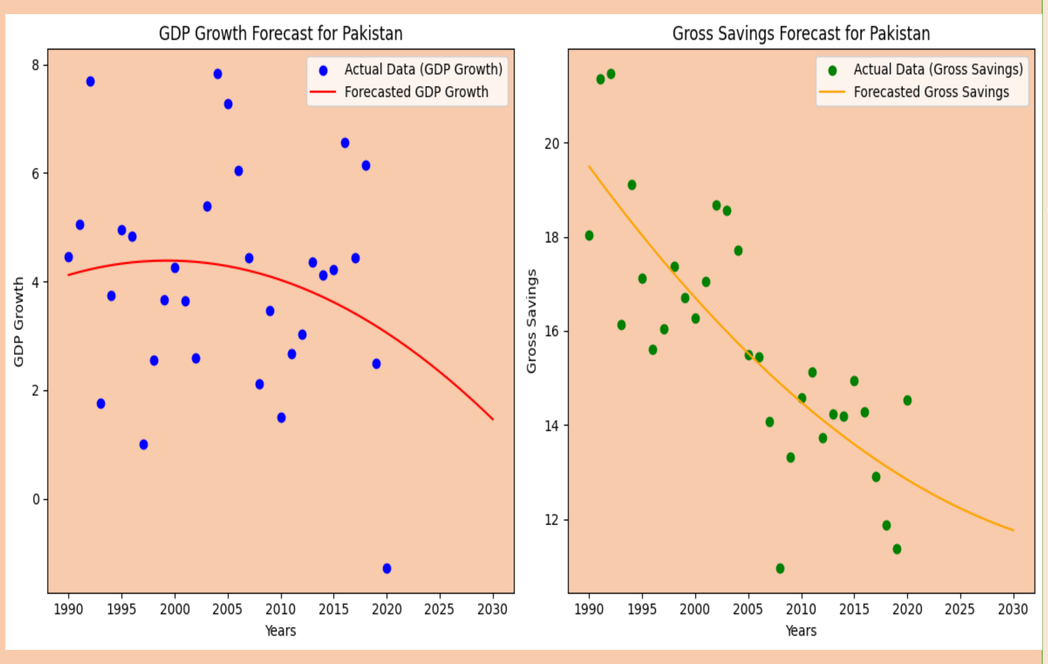
It is essential to comprehend the interdependent dynamics of GDP growth and gross savings in the field of economic analysis. This study employs cutting-edge methods to identify patterns and project future trends with a focus on Pakistan's economic environment. Curve fitting techniques are utilized to project possible trajectories, and KMeans clustering is used to find unique clusters. The studies and visualizations on this poster are intended to provide insightful information for economic forecasting and decision-making.

The additional line plot combines GDP growth (blue) and gross savings (green) on a single graph, spanning the years 1990 to 2020. The left y-axis represents GDP growth, and the right y-axis represents gross savings. This visual representation offers a holistic view of the relationship between GDP growth and gross savings, providing insights into potential correlations or divergences in the economic trends of Pakistan.



GDP Growth Forecast:

The left subplot presents the actual GDP growth data (blue) from 1990 to 2020, alongside the forecasted trajectory (red) up to 2030. The polynomial curve fitting captures historical trends and projects potential future developments. This graph offers a clear visualization of the historical GDP growth and provides a forecast, enabling a glimpse into the economic direction in the coming years.



Gross Savings Forecast:

The right subplot illustrates the actual gross savings data (green) juxtaposed with the forecasted path (orange) from 1990 to 2020, extended to 2030. The curve fitting model provides insights into the historical and future trends in gross savings. This graph allows for a comprehensive analysis of gross savings trends, facilitating an understanding of how economic factors may influence savings patterns over time.

Conclusion:

The analysis of Pakistan's GDP growth and gross savings unveils distinctive patterns and future trajectories. The KMeans clustering reveals economic phases, while curve fitting forecasts future trends. The resilient GDP growth trajectory and nuanced insights into savings patterns provide valuable information for policymakers and stakeholders. This study enhances our understanding of Pakistan's economic dynamics, facilitating informed decision-making for sustainable economic development.

I curated datasets from the World Bank database, tailoring them to suit the specific requirements of my experiment. The modified datasets used in this analysis have been uploaded to my GitHub repository. To seamlessly execute the provided code, kindly download the dataset from the following GitHub link:
https://github.com/JawadDS/ADS_Assignment3