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Predictive Modeling of Nominal Gross Domestic Product (Gdp) in Current USD for India (2025-2030) Using Regression Training Analysis and Machine Learning

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Abstract: *This research focuses on the analysis of India's Nominal Gross Domestic Product (GDP) from 1993 to 2022, utilizing online data sources. Employing linear regression models in Python programming, the study seeks to unravel patterns and trends within the historical GDP Nominal (Current USD) data. The trained models are then leveraged to predict future trends in Nominal GDP, providing a valuable tool for understanding and forecasting economic trajectories. This research contributes to the broader goal of fostering sustainable socio-economic growth for a self-reliant Bharat.*

Keywords: GDP, Machine Learning, Linear Regression, Python Programming

I. INTRODUCTION

In the pursuit of understanding and unraveling the economic trajectory of India, this research focuses exclusively on the Nominal Gross Domestic Product (GDP) from 1993 to 2022. Nominal GDP, represented in current USD, serves as a pivotal economic indicator, reflecting the total market value of goods and services produced within the country. Through a meticulous examination of historical data and the application of linear regression models in Python programming, this study aims to discern patterns and trends specific to Nominal GDP. By concentrating landscape of India, paving the way for informed decision-making and sustainable socio-economic growth on this key economic parameter, we seek to contribute valuable insights into the financial.

II. METHODOLOGY

We initiated the study by constructing a comprehensive table encompassing Nominal Gross Domestic Product (GDP) in current USD, specifically focusing on data from the years 1993 to 2022.

Table 1: Gross Domestic Product (GDP) of India

Year	GDP Nominal (Current USD)	Year	GDP Nominal (Current USD)
2022	$3,385,090,000,000	2000	$468,395,000,000
2021	$3,150,310,000,000	1999	$458,820,000,000
2020	$2,671,600,000,000	1998	$421,351,000,000
2019	$2,835,610,000,000	1997	$415,868,000,000
2018	$2,702,930,000,000	1996	$392,897,000,000
2017	$2,651,470,000,000	1995	$360,282,000,000
2016	$2,294,800,000,000	1994	$327,276,000,000
2015	$2,103,590,000,000	1993	$279,296,000,000
2014	$2,039,130,000,000	**Machine Learning: Training Models using Linear Regression In python Programming.**	

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2013	$1,856,720,000,000	*Python Program:* *import pandas as pd* *import numpy as np* *import matplotlib.pyplot as plt* *df=pd.read_csv("gdp.csv")* *x=df.iloc[:,0], y=df.iloc[:,1]* *x=np.array(x),y=np.array(y)* *from sklearn.linear_model import LinearRegression* *linreg=LinearRegression()* *x=x.reshape(-1,1),plt.plot(x,y,".")* *plt.title("GDP Nominal")* *linreg.fit(x,y)* *xnew=np.array([[0],[2030]])* *print(linreg.predict(xnew))* *ypred=linreg.predict(x)* *plt.plot(x,ypred,".r"),plt.show()*
2012	$1,827,640,000,000	
2011	$1,823,050,000,000	
2010	$1,675,620,000,000	
2009	$1,341,890,000,000	
2008	$1,198,900,000,000	
2007	$1,216,740,000,000	
2006	$940,260,000,000	
2005	$820,382,000,000	
2004	$709,149,000,000	
2003	$607,699,000,000	
2002	$514,938,000,000	
2001	$485,441,000,000	

III. RESULT

Our analysis, employing regression training analysis and machine learning through Python programming, yields predicted values for Nominal Gross Domestic Product (GDP) in current USD for the years 2025 to 2030.

Table 2: Future predicted values using Machine Learning Regression Analysis.

2030	$3,744,163,344,827
2029	$3,639,232,689,655
2028	$3,534,302,034,482
2027	$3,429,371,379,310
2026	$3,324,440,724,137
2025	$3,219,510,068,965

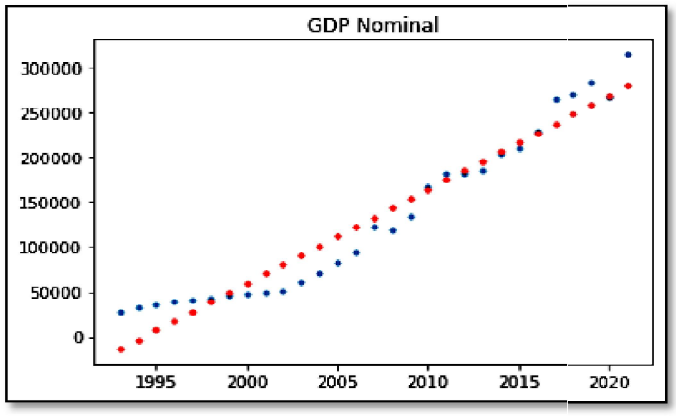

Figure 1: Linear Regression

IV. CONCLUSIONS

In conclusion, our study on Nominal Gross Domestic Product (GDP) using regression training analysis and machine learning provides a valuable forecast for the years 2025 to 2030. By focusing solely on Nominal GDP in current USD, we offer insights into the expected economic trends, aiding stakeholders and policymakers in making informed decisions for sustained growth and prosperity in India. This targeted analysis contributes to a more nuanced understanding of the financial landscape, emphasizing the significance of Nominal GDP in shaping the nation's economic future.

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