Final Report – Project Demonstration

Project Title: Empowering India – Analysing the Evolution of Union Budget

1. Introduction

This project focuses on analysing the evolution of India's Union Budget over the years. The objective is to understand trends in revenue, expenditure, fiscal deficit, sectoral allocation, and economic growth impact. The system integrates data analytics, machine learning, and visualization tools to provide meaningful insights from historical budget datasets.

2. Objectives of the Project

• Analyse historical Union Budget data. • Identify trends in revenue and expenditure patterns. • Predict future budget allocations using Machine Learning. • Visualize financial trends using BI tools. • Support data-driven policy insights.

3. Methodology

The project follows a structured methodology including data collection from official budget reports, preprocessing and cleaning of financial datasets, exploratory data analysis, predictive modelling using regression and time-series techniques, and visualization using Power BI/Tableau dashboards.

4. System Architecture

The system consists of the following layers: • Data Layer – Historical Union Budget datasets. • Processing Layer – Data cleaning and transformation. • ML Layer – Predictive modelling and trend analysis. • Visualization Layer – Dashboards and reports. • User Interface Layer – Interactive insights display.

5. Tools & Technologies Used

• Python for data processing and ML models. • Pandas, NumPy for data manipulation. • Scikit-learn for predictive modelling. • Power BI / Tableau for dashboards. • Salesforce (optional integration for reporting).

6. Demonstration Overview

During the project demonstration, the following were presented: • Dataset overview and preprocessing steps. • Trend analysis of revenue and expenditure. • Machine Learning model predictions. • Interactive dashboards showcasing key insights. • Performance and testing results.

7. Results & Key Findings

• Steady increase in capital expenditure over the years. • Variations in fiscal deficit across economic cycles. • Increased allocation toward infrastructure and digital economy. • Predictive models show moderate accuracy for short-term forecasts.

8. Challenges Faced

• Data inconsistency across different budget years. • Missing or unstructured historical data. • Model overfitting in early training phases. • Integration challenges with visualization tools.

9. Conclusion

The project successfully demonstrates how data analytics and machine learning can be applied to analyse the evolution of the Union Budget. The system provides structured insights that help understand economic priorities and fiscal trends. Future enhancements can include real-time economic indicators and advanced AI forecasting.

10. Future Enhancements

• Integration of real-time economic indicators. • Advanced deep learning models for forecasting. • Web-based interactive dashboard deployment. • Automated report generation using GenAI.