Tableau or Power BI Dash boarding project proposal

1. Executive Summary:

This project aims to develop interactive dashboards using Excel, Power BI, and Tableau to analyze outage patterns and generation performance across thermal and hydro power stations in Northern India. The dashboards will provide stakeholders with real-time insights into capacity utilization, coal stock levels, and sector-wise generation trends, enabling data-driven decisions for operational efficiency.

2. Problem Statement:

Background: Frequent outages and inconsistent coal stock levels across power stations in Northern India hinder optimal electricity generation.

Objective: To visualize and analyze generation performance and outage trends across sectors and states.

Scope: Focus on unit-level and station-level data from thermal and hydro stations, covering metrics like monitored capacity, outage types, coal stock, and generation vs. scheduled programs.

3. Data Sources:

Primary Data: Operational datasets manually curated from Northern India's power sector, including unit-level and station-level entries.

Secondary Data: External data Not applicable for this project phase.

4. Methodology:

- Data Preparation/Integration: Clean and structure the datasets in Excel for consistency and usability.
- Dashboard Design: Use Power BI and Tableau to create interactive dashboards with filters for region, sector, station type, and outage type.

- Interactivity/ Visualization Strategy**:** Highlight trends in coal stock, outage frequency, and generation gaps using charts, KPIs, and slicers.

5. Expected Outcomes:

- Sector-wise and state-wise dashboards showing generation performance and outage impact.
- Visual insights into coal stock dependencies and reserve shutdown patterns.
- Actionable recommendations for improving generation reliability and resource planning.

6. Tools and Technologies:

- Excel: Data cleaning and preliminary analysis.
- SQL: for data extraction and transformation.
- Power BI / Tableau**:** Dashboard development and interactive visual storytelling.

7. Risks and Challenges:

- Incomplete or inconsistent data entries across stations
- Potential challenges in visualizing multi-dimensional metrics (e.g., outage type vs. coal stock vs. generation)
- Ensuring clarity and usability for non-technical stakeholders

8. Conclusion:

This project will deliver a comprehensive dash boarding solution for analyzing power generation dynamics in Northern India. By leveraging Excel, Power BI, and Tableau, the project will transform raw operational data into meaningful insights, supporting better outage management and performance optimization.