Tech Saksham

Data Analytics with Power BI

Case Study Report

ANALYSIS OF COMMERCIAL ELECTRICITY CONSUMPTION IN INDIAN STATES

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ABSTRACT

This project aims to analyze and visualize the commercial electricity consumption patterns across various states in India using Power BI. The dataset includes historical data on commercial electricity consumption, categorized by state, over a specific period. Through this analysis, we seek to identify trends, patterns, and insights into the commercial electricity usage behavior of different states. The Power BI dashboard will provide interactive visualizations, including geographical maps, line charts, and bar graphs, to present key findings and facilitate a comprehensive understanding of commercial electricity consumption dynamics. This analysis can aid policymakers, energy companies, and stakeholders in making informed decisions regarding energy planning, resource allocation, and sustainability initiatives in India.

INDEX

CHAPTER 1

INTRODUCTION

1.1 Problem Statement

The objective of this project is to conduct a comprehensive analysis of commercial electricity consumption in a specific Indian state using Power BI. The analysis aims to provide insights into the patterns, trends, and factors influencing commercial electricity usage within the state, enabling stakeholders to make informed decisions and optimize resource allocation. The dataset should include information on commercial electricity consumption, demographic factors, economic indicators, seasonal variations, and any other relevant variables. Investigate the relationship between commercial electricity consumption and demographic factors such as population density, urbanization rate, income levels, and business activity. Analyze how these factors influence electricity demand in different regions within the state.

1.2 Proposed Solution

The proposed solution is to develop a PowerBI dashboard that can analyze and visualize real-time customer data. Obtain the relevant data on commercial electricity consumption in the Indian state from reliable sources such as government agencies or electricity boards. Use Power BI's visualization tools to create charts, graphs, and other visualizations that represent commercial electricity consumption trends. You can create visualizations such as line charts, bar charts, and maps to display consumption patterns over time and across regions. Calculate key metrics such as average electricity consumption, peak demand periods, and year-over-year growth rates to provide deeper insights into commercial electricity usage.

1.3 Feature

Gather data on commercial electricity consumption in Indian states from reliable sources such as government databases or research institutions. Gather data on commercial electricity consumption in Indian states from reliable sources such as government databases or research institutions. Gather data on commercial electricity consumption in Indian states from reliable sources such as government databases or research institutions. Gather data on commercial electricity consumption in Indian states from reliable sources such as government databases or research institutions. Gather data on commercial

electricity consumption in Indian states from reliable sources such as government databases or research institutions.

1.4 Advantages

Power BI provides powerful visualization tools to represent electricity consumption trends, patterns, and anomalies through interactive charts, graphs, and maps, making complex data easier to understand. Power BI provides powerful visualization tools to represent electricity consumption trends, patterns, and anomalies through interactive charts, graphs, and maps, making complex data easier to understand. Power BI provides powerful visualization tools to represent electricity consumption trends, patterns, and anomalies through interactive charts, graphs, and maps, making complex data easier to understand. Real-time monitoring of electricity consumption enables businesses to track their energy usage against targets and benchmarks, facilitating proactive measures to address inefficiencies or deviations from expected usage patterns. Real-time monitoring of electricity consumption enables businesses to track their energy usage against targets and benchmarks, facilitating proactive measures to address inefficiencies or deviations from expected usage patterns.

1.5 Scope

Gather data on commercial electricity consumption in the Indian state of interest. This data might be available from government sources, utility companies, or other relevant organizations. Ensure that the data is reliable and comprehensive. Design a data model that represents the relationships between different entities in your dataset. This could include tables for electricity consumption, time periods, geographic regions, etc. Create visualizations in Power BI to explore and analyze the data. This could include charts, graphs, maps, and other types of visualizations to help identify trends, patterns, and outliers in the data. Use the visualizations to conduct a scope analysis of commercial electricity consumption in the Indian state. This may involve comparing consumption across different regions or time periods, identifying factors that influence consumption, and assessing the impact of various interventions or policies.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 Services Used

Data Source: Obtain data on commercial electricity consumption in Indian states. This data could be sourced from government databases, utility companies, or research organizations.

Power BI Desktop: Install Power BI Desktop, which is a free application that allows you to connect to your data, visualize and analyze it, and publish reports.

Data Preparation: Import the data into Power BI Desktop. Perform any necessary data cleaning, transformation, and modeling to prepare the data for analysis.

Visualization Tools: Use Power BI's visualization tools to create charts, graphs, and maps to analyze commercial electricity consumption trends across different Indian states.

2.2 Tools and Software used

Tools:

- **PowerBI**: The main tool for this project is PowerBI, which will be used to create interactive dashboards for real-time data visualization.

- **Power Query**: This is a data connection technology that enables you to discover, connect, combine, and refine data across a wide variety of sources.

Software Requirements:

- **PowerBI Desktop**: This is a Windows application that you can use to create reports and publish them to PowerBI.

- **PowerBI Service**: This is an online SaaS (Software as a Service) service that you use to publish reports, create new dashboards, and share insights.

- **PowerBI Mobile**: This is a mobile application that you can use to access your reports and dashboards on the go.

CHAPTER 3

PROJECT ARCHITECTURE

3.1 Architecture

Data Collection: Gather data on commercial electricity consumption in the Indian state of interest from reliable sources such as government agencies, electricity boards, or research organizations. Ensure the data is comprehensive and includes relevant parameters like consumption patterns, demographics, industry sectors, etc.

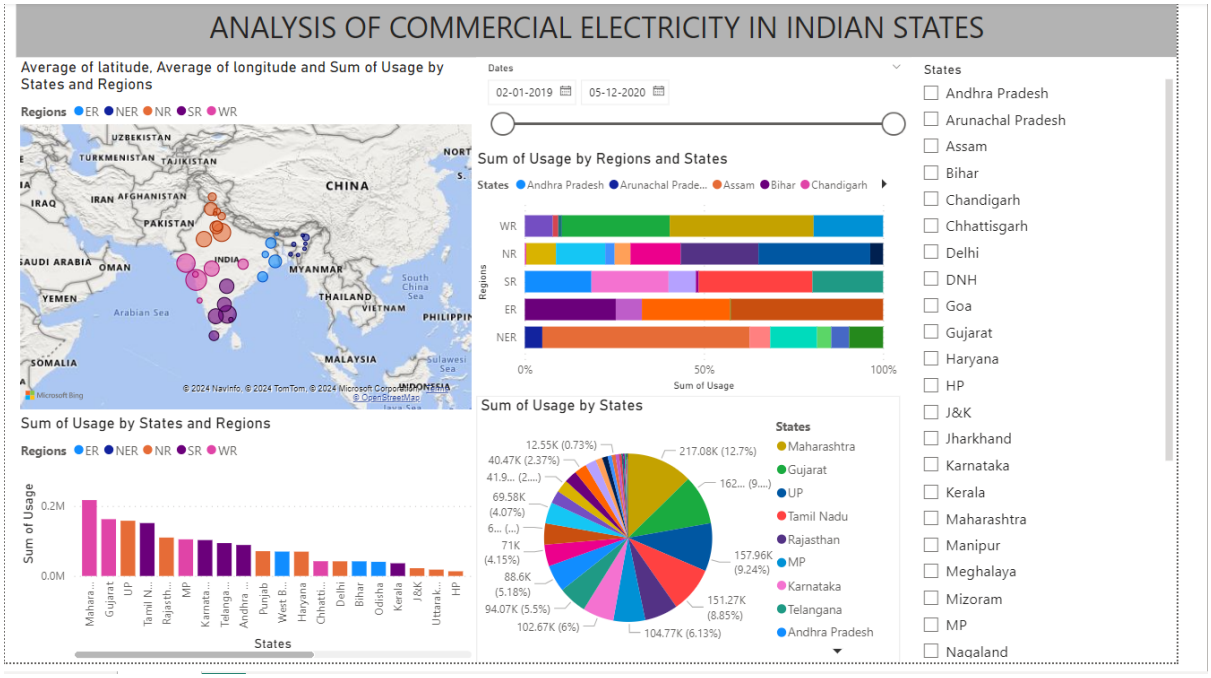
Data Preparation: Cleanse and preprocess the data to remove any inconsistencies, missing values, or outliers. You may also need to integrate data from multiple sources and format it appropriately for analysis in Power BI.

Data Modeling: Design a data model that represents the relationships between different entities such as electricity consumption, demographic factors, economic indicators, etc. Define measures and dimensions that will be used for analysis.

Visualization: Create visually appealing and insightful dashboards using Power BI. Utilize various visualization techniques such as charts, graphs, maps, and tables to represent different aspects of commercial electricity consumption in the state.

Analysis: Perform in-depth analysis of the data to identify trends, patterns, and correlations. Explore factors influencing commercial electricity consumption, such as industrial activity, population density, economic growth, etc

Dashboard


ANALYSIS OF COMMERCIAL ELECTRICITY IN INDIAN STATES
Average of latitude, Average of longitude and Sum of Usage by States and Regions
Regions ER NER NR SR WR
Dates
02-01-2019
05-12-2020
Sum of Usage by Regions and States
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Regions
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Tamil Nadu
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Bihar
Chandigarh
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Delhi
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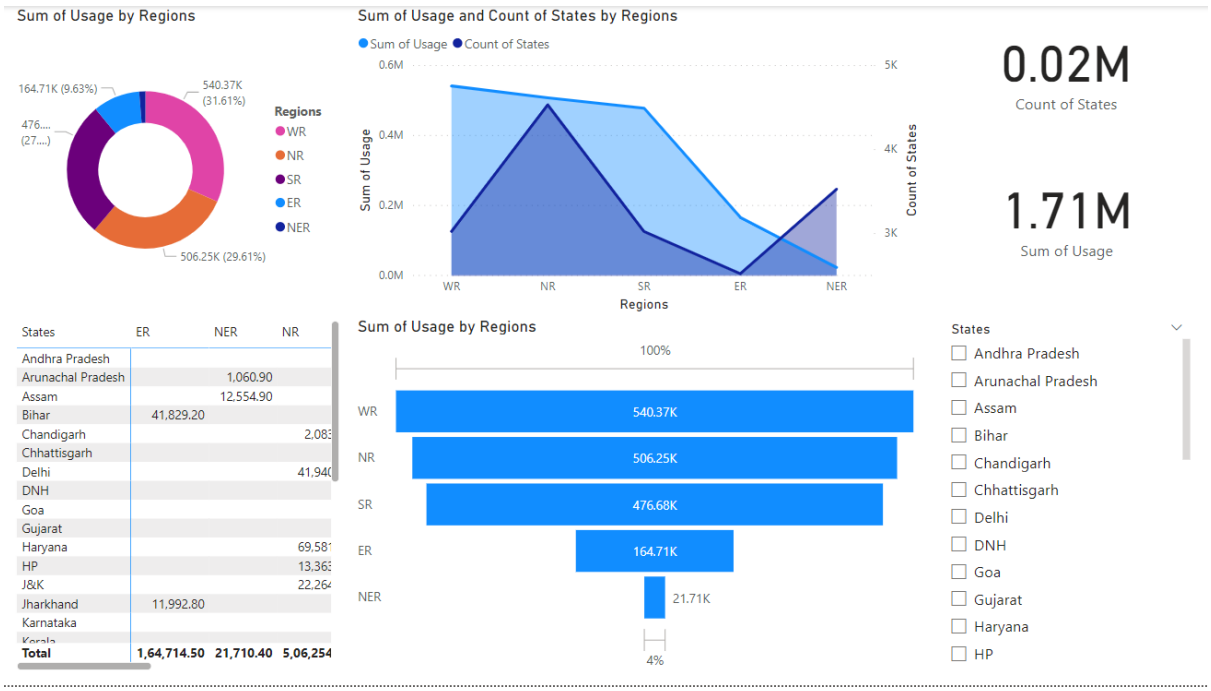
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Bihar 41,829.20
Chandigarh
Chhattisgarh
Delhi
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Goa
Gujarat
Haryana
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Jharkhand 11,992.80
Karnataka
Kerala
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WR 540.37K
NR 506.25K
SR 476.68K
ER 164.71K
NER 21.71K
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Bihar
Chandigarh
Chhattisgarh
Delhi
DNH
Goa
Gujarat
Haryana
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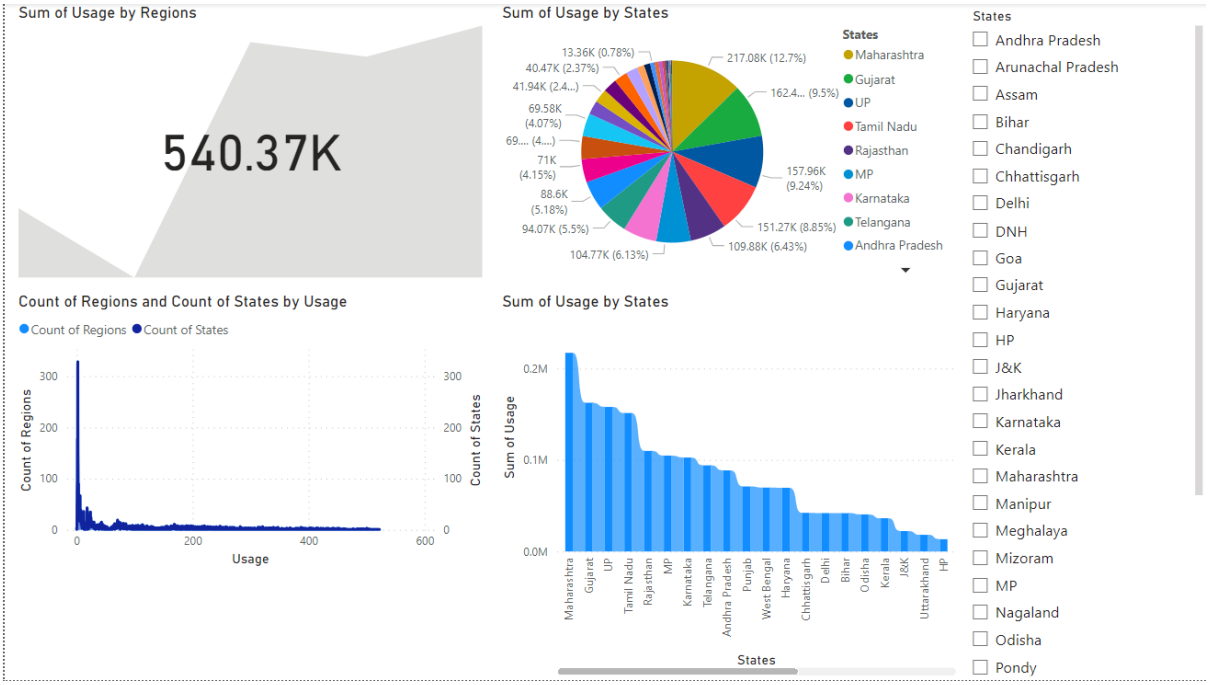

CONCLUSION

. The project has also highlighted the importance of data visualization in making complex data more understandable and accessible. The use of PowerBI has made it possible to present data in a visually appealing and easy-to-understand format, thereby aiding in better decision-making. Utilize PowerBI's forecasting capabilities to predict future trends in commercial electricity consumption based on historical data. This can help in understanding the potential growth or decline in consumption. Gather data on commercial electricity consumption for different Indian states from reliable sources such as government websites or energy regulatory authorities. Clean and prepare the data for analysis in Power BI. This may involve formatting, filtering, and transforming the data as necessary. Clean and prepare the data for analysis in Power BI. This may involve formatting, filtering, and transforming the data as necessary.

FUTURE SCOPE

The future scope of this project is vast. With the advent of advanced analytics and machine learning, PowerBI can be leveraged to predict future trends based on historical data. Gather data on current and historical commercial electricity consumption in different Indian states from reliable sources like government reports, energy agencies, or power companies. Gather data on current and historical commercial electricity consumption in different Indian states from reliable sources like government reports, energy agencies, or power companies. Gather data on current and historical commercial electricity consumption in different Indian states from reliable sources like government reports, energy agencies, or power companies.-+