"ANALYSIS OF COMMERCIAL ELECTRICITY CONSUPTION IN INDIA"

MANONMANIAM SUNDARANAR UNIVESITY

"RANI ANNA GOVERNMENT COLLEGE FOR WOMAN"

NM ID	NAME
11A139C0DEFF9C9996F4EABC489FE57B	CHENCY BEULAH M

ABSTRACT

Energy has been universally recongnized as one of the most important input for economic growth and human development. Generally, it has defined as "Capacity to do work" thereby,for bring out desirable design on economic level there must be need of intensive of energy performance in various sectors of the country. Preceiving commercial energy at the one of economic viability comsumption has equip the present status of economic level to be boost and reach global advance in due period with identification of which are highly consumes among public and the statistics of this has brought out in this study. Electricity, LPG, kerosene, coal and natural gas are the chosen commercial energy and data for the specified years have collected from central electricity authority GAE and Energy statistics 2015 for 2007-2014.

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CHAPTER 1

INTRODUCTION

- **Problem Statement**

The analysis of commercial electricity consumption in an Indian state aims to address several key challenges. Firstly, there is a lack of comprehensive data and understanding regarding the specific patterns, trends, and factors influencing electricity usage within the commercial sector. This hampers effective energy planning, resource allocation, and policy formulation to meet the growing demand for electricity in a sustainable manner. Secondly, the commercial sector is a significant contributior to overall electricity consumption in the state, but the factors driving this consumption remain poorly understood. Without a clear understanding of the drivers, it is challenging to develop targeted strategies to manage and optimize electricity usage, reduce costs, and promote energy efficiency.

- **Proposed Solution**

Data collection of gather data on commercials aired in various Indian states across different platforms (TV, radio, digital platforms). Use tools like media monitoring software,surveys, and market research reports to collect comprehensive data. Analyze the content of commercials to identify products, brands, messaging, and target demographics. Categorize commercials based on product type (e.g., FMCG, electronics,apparel) and themes (e.g., family-oriented, youth-centric). Assess the impact of commercials on consumer behaviour, brand perception, and sales. Use metrics like brand awareness, purchase intent, and market share to measure the

effectiveness of advertising campaigns. Use predictive modeling techniques to forecast future consumption trends based on historical data and current advertising trends. Anticipate shifts in consumer preferences and market dynamics.

- **Feature**

- **Real -Time Analysis:** Real-time analysis of commercial electricity consumption in an Indian state would involve monitoring and analyzing data on electricity usage from commercial establishment such as officies, shops, industries, etc. **Customer Segmentation**: By segmenting commercial electricity customers in this way, utilities and policymaketrs can talior their approaches to energy management, pricing, and incentives to better meet the diverse needs of different customer groups while promoting sustainability and efficiency. **Trend Analysis**: Trend analysis of commercial electricity consumption in an Indian state involves examining historical data to identify patterns, trends, and insights over time. .
  Predictive Analysis: It will use historical data to predict future customer behavior.

- **Advantage**

- Sectoral Analysis: Examining electricity usage patterns across different sectors such as manufacturing, retail, hospitality, IT, healthcare, etc., to understand sector-specific consumption behaviors and requirements.
- Geographical Variations: Studying regional variations in electricity consumption within the state, considering factors such as urban vs. rural areas, industrial vs. residential zones, and coastal vs. inland regions.
- Peak Demand Management: Identifying peak demand periods and developing strategies to manage peak loads efficiently, including demand response programs, time-of-use pricing, and load-shifting initiatives.

- **Scope**

- Renewable Energy Integration: Assessing the potential for integrating renewable energy sources such as solar, wind, and biomass into the

commercial electricity mix, considering factors such as resource availability, grid compatibility, and economic viability.

- Demand Forecasting: Utilizing advanced analytics and forecasting models to predict future electricity demand trends, considering factors such as population growth, economic development, and technological advancements.
- Environmental Impact Assessment: Assessing the environmental impact of commercial electricity consumption, including carbon emissions, air pollution, and resource depletion, and proposing mitigation measures to promote sustainability.
- Overall, the scope of analysis of commercial electricity consumption in an Indian state is broad and multifaceted, requiring a holistic approach that integrates technical, economic, social, and environmental considerations to achieve sustainable energy outcomes.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 Services Used

- **Data Collection and Storage Services**: Banks need to collect and store the data of commercial electricity consumption in indian states. This could be achieved form various staes usage of electricity in INDIA.
- **Data Processing Services**: Cloud-based platform where users can publish, share, and collaborate on Power BI reports and dashboards. It provides features such as data refresh scheduling, sharing and collaboration tools, and access control through integration with Azure Active Directory.

- **Machine Learning Services**: Azure Machine Learning or AWS SageMaker can be used to build predictive models based on historical data.

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.

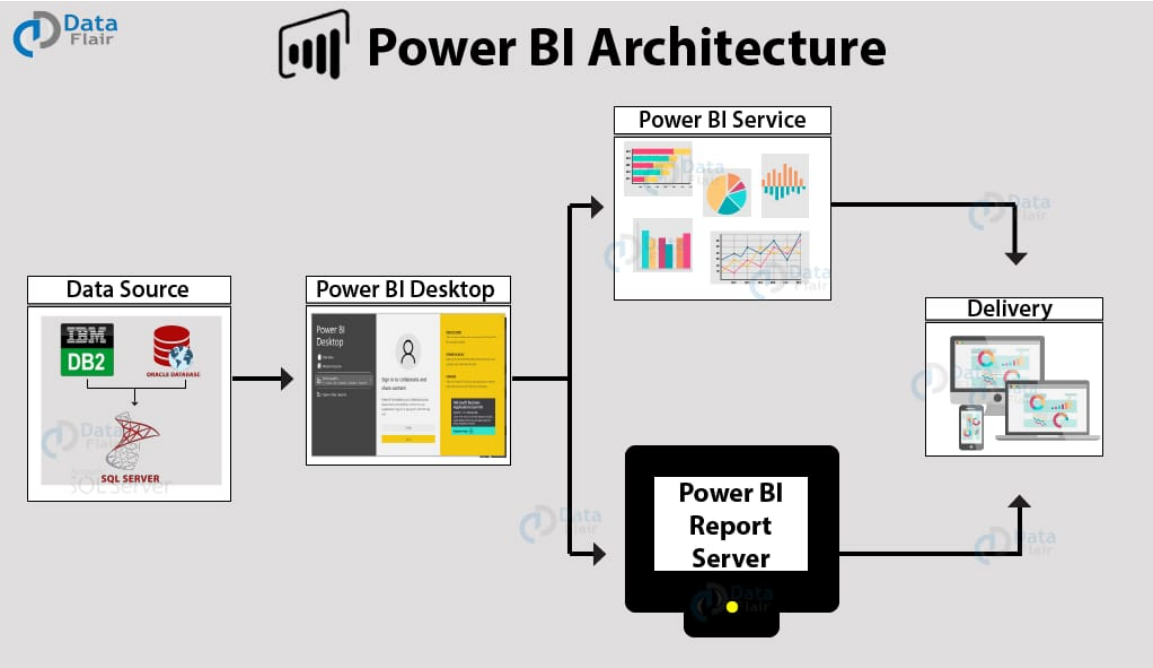
Software Requirements:

- **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

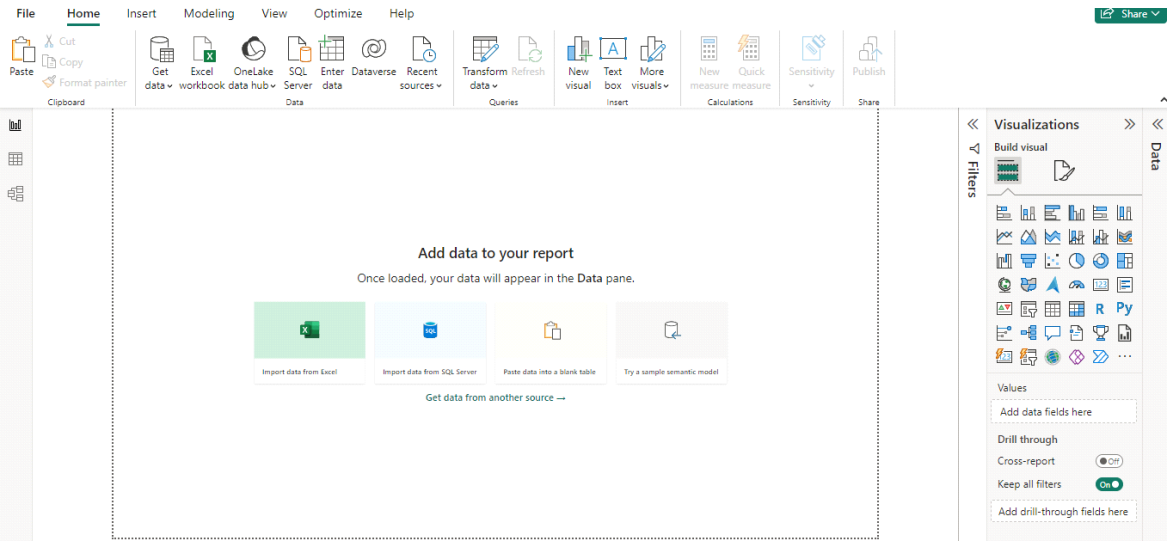
PROJECT ARCHITECTURE

3.1 Architecture



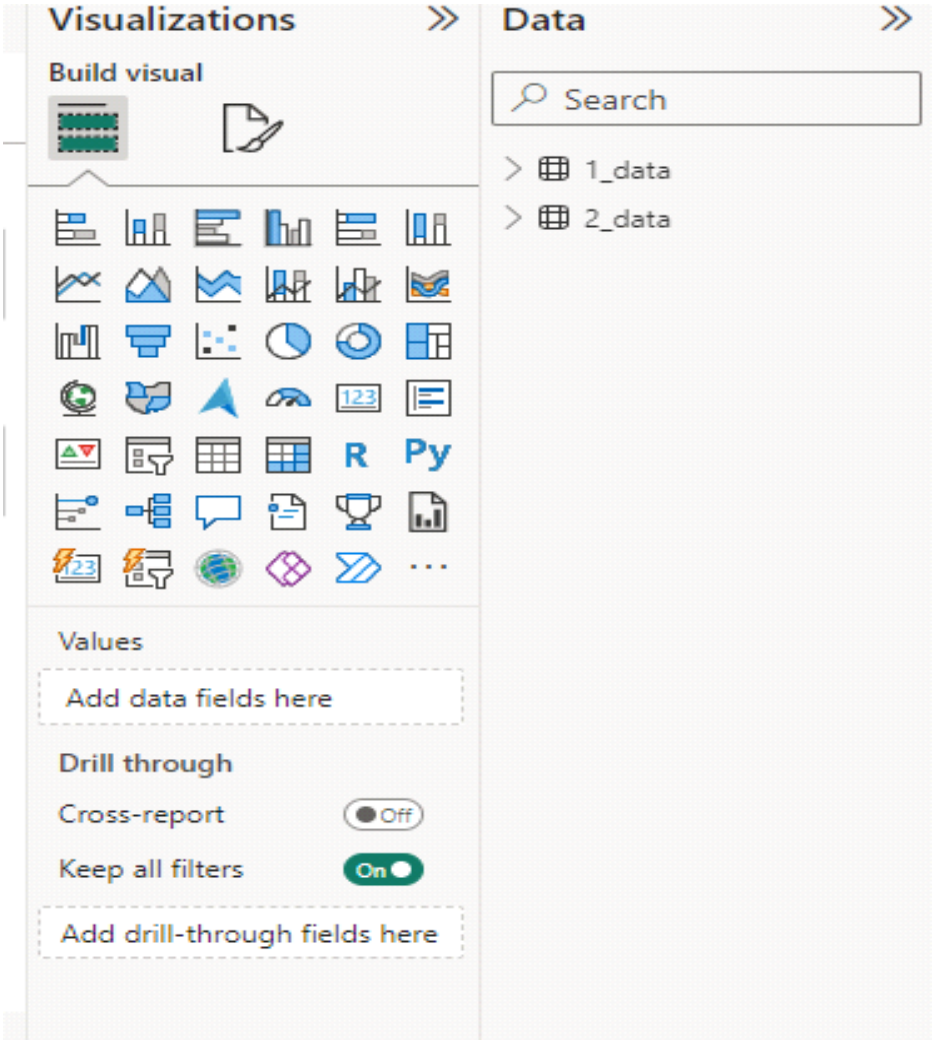
Here’s a high-level architecture for the project:

- **Data Collection**: Real-time data of electricity is collected from various sources of eletricity from various states in india.This could be achieved using services like Azure Event Hubs or AWS Kinesis.
- **Data Storage**:



- The collected data is stored in a database for processing. Azure SQL Database or AWS RDS can be used for this purpose.
- **Data Processing**: The stored data is processed in real-time using services like Azure Stream Analytics or AWS Kinesis Data Analytics.
- **Machine Learning**: Predictive models are built based on processed data using Azure Machine Learning or AWS SageMaker. These models can help in predicting customer behavior, detecting fraud, etc.

- **Data Visualization**:



- The processed data and the results from the predictive models are visualized in real-time using PowerBI. PowerBI allows you to create interactive dashboards that can provide valuable insights into the data.
- **Data Access**: The dashboards created in PowerBI can be accessed through PowerBI Desktop, PowerBI Service (online), and PowerBI Mobile.

CHAPTER 4

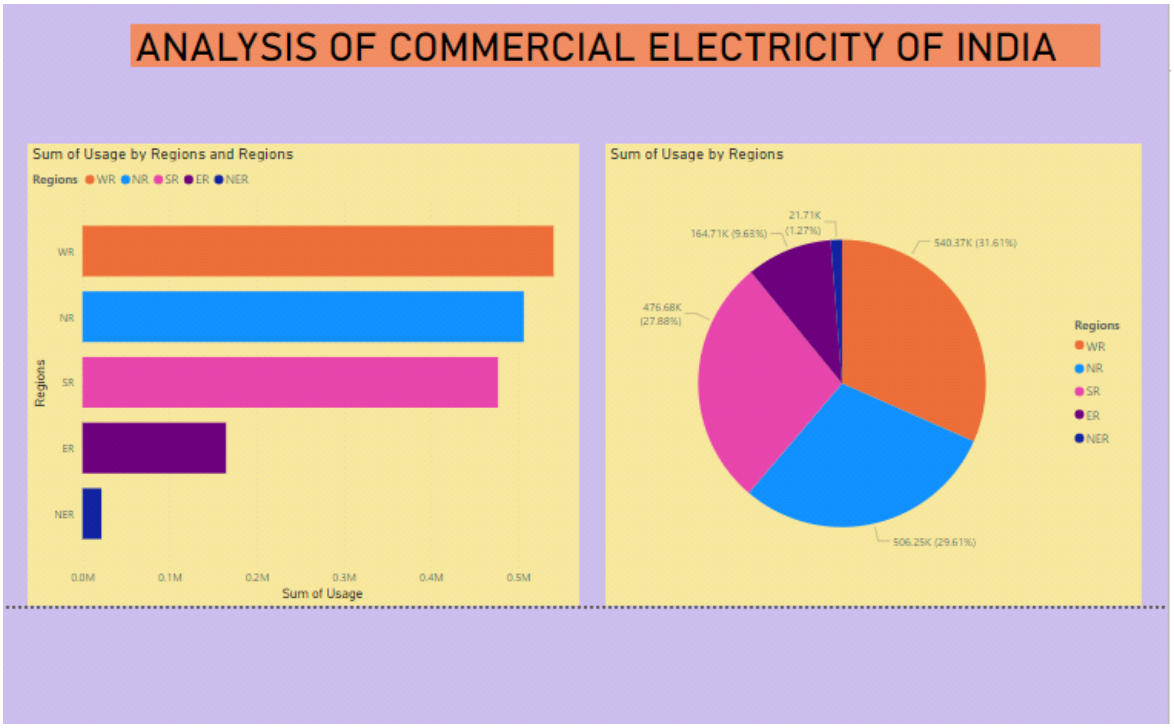
DATA WITH RESULT

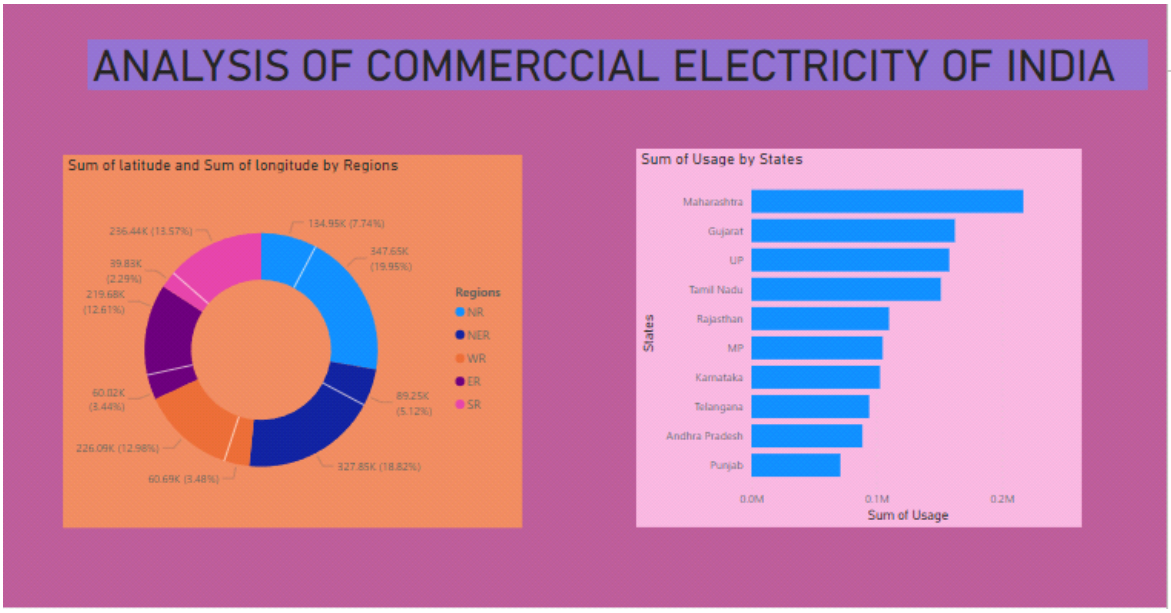
The usage of electricity in state wise data:

Column1	Punjab	Haryana	Rajasthan	Delhi	UP
1/2/2019 12:00:00 AM	119.9	130.3	234.1	85.8	313.9
1/3/2019 12:00:00 AM	121.9	133.5	240.2	85.5	311.8
1/4/2019 12:00:00 AM	118.8	128.2	239.8	83.5	320.7
1/5/2019 12:00:00 AM	121	127.5	239.1	79.2	299
1/6/2019 12:00:00 AM	121.4	132.6	240.4	76.6	286.8
1/7/2019 12:00:00 AM	118	132.1	241.9	71.1	294.2
1/8/2019 12:00:00 AM	107.5	121.4	237.2	69	289.4
1/9/2019 12:00:00 AM	132.5	148.2	197	89.2	258.6
1/10/2019 12:00:00 AM	131.5	157	199.9	92.8	284.2
1/11/2019 12:00:00 AM	130.3	145.3	187.7	79.5	281.4
1/12/2019 12:00:00 AM	137.9	151.9	189.9	92.6	298.6
1/13/2019 12:00:00 AM	135.8	141.4	186.9	89.4	310
1/14/2019 12:00:00 AM	139.3	143.8	195.2	82.2	319.5
1/15/2019 12:00:00 AM	141.1	142.9	185.4	77.8	326.7

States	Regions	latitude	longitude	Dates	Usage
Punjab	NR	31.51997398	75.98000281	1/2/2019 12:00:00 AM	119.9
Haryana	NR	28.45000633	77.01999101	1/2/2019 12:00:00 AM	130.3
Rajasthan	NR	26.44999921	74.63998124	1/2/2019 12:00:00 AM	234.1
Delhi	NR	28.6699929	77.23000403	1/2/2019 12:00:00 AM	85.8
UP	NR	27.59998069	78.05000565	1/2/2019 12:00:00 AM	313.9
Uttarakhand	NR	30.32040895	78.05000565	1/2/2019 12:00:00 AM	40.7
HP	NR	31.10002545	77.16659704	1/2/2019 12:00:00 AM	30
J&K	NR	33.45	76.24	1/2/2019 12:00:00 AM	52.5
Chandigarh	NR	30.71999697	76.78000565	1/2/2019 12:00:00 AM	5
Chhattisgarh	WR	22.09042035	82.15998734	1/2/2019 12:00:00 AM	78.7
Gujarat	WR	22.2587	71.1924	1/2/2019 12:00:00 AM	319.5
MP	WR	21.30039105	76.13001949	1/2/2019 12:00:00 AM	253
Maharashtra	WR	19.25023195	73.16017493	1/2/2019 12:00:00 AM	428.6
Goa	WR	15.491997	73.81800065	1/2/2019 12:00:00 AM	12.8
DNH	WR	20.26657819	73.0166178	1/2/2019 12:00:00 AM	18.6
Andhra Pradesh	SR	14.7504291	78.57002559	1/2/2019 12:00:00 AM	164.6
Telangana	SR	18.1124	79.0193	1/2/2019 12:00:00 AM	204.2
Karnataka	SR	12.57038129	76.91999711	1/2/2019 12:00:00 AM	206.3
Kerala	SR	8.900372741	76.56999263	1/2/2019 12:00:00 AM	72.7
Tamil Nadu	SR	12.92038576	79.15004187	1/2/2019 12:00:00 AM	268.3
Pondy	SR	11.93499371	79.83000037	1/2/2019 12:00:00 AM	6.3
Bihar	ER	25.78541445	87.4799727	1/2/2019 12:00:00 AM	82.3
Jharkhand	ER	23.80039349	86.41998572	1/2/2019 12:00:00 AM	24.8
Odisha	ER	19.82042971	85.90001746	1/2/2019 12:00:00 AM	70.2

Dashboard





CONCLUSION

The aim of this project was to identify the variables that influence the generation, the consumption and the price of the electricity in United States.

We have seen that the generation of electricity in American states is driven by the number of commercial and industrial customers. Concerning the electricity consumption, it is influenced by the energy production itself and the amount of commercial customers. Our prediction models are quite accurate and confirmed the results of our exploratory data analysis. About our models, we should not forget that lots of variables can explain the electricity consumption and production as we have seen during the eploratory data analysis, but we only used the most significant once.Finally, regarding the Californian state, we were able to model the average power per hour over a year. We see that renewable energies are subject to seasonality. The power of renewable energies is highly volatile, which makes them difficult to predict. For this reason, it is more difficult to predict these data in a very short term.

FUTURE SCOPE

The future scope for analyzing commercial electricity consumption in Indian states

1. *Renewable Energy Integration*: Exploring opportunities for integrating renewable energy sources, such as solar and wind power, into commercial electricity consumption to reduce carbon emissions and promote sustainability.

2. *Smart Grid Technologies*: Implementing smart grid technologies to enhance grid reliability, optimize energy distribution, and enable real-time monitoring and control of commercial electricity consumption.

3. *Demand-Side Management*: Developing demand-side management strategies to incentivize energy efficiency practices, encourage load shifting, and reduce peak demand in commercial establishments.

REFERENCES

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LINK

https://github.com/githubtraining/hellogitworld.git