**“ANALYSIS OF COMMERCIAL ELECTRICITY CONSUMPTION IN INDIAN STATE”**

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**ABSTRACT**

In the digital age, data has become an invaluable asset for businesses, particularly in analysis of electrical usage The proposed project, “ Analysis of commercial Electricity consumption in indian state” aims to leverage PowerBI, a leading business intelligence tool, to analyze and visualize real-time customer data.It can help us to analyse the usage of electricity in india. India's electricity industry is mainly owned and operated by public sector.we need analyse how people use electricity in each state so tha we have idea of how electricity is used in all over india and with help of the information of usage we can give the elctricity as they needed .we can prevent the excess usage of electricity. For analysing electricity usage we use power bi to represent it in diagran or graph or chart etc..Let see the use of it.

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**CHAPTER 1**

**INTRODUCTION**

* **Problem Statement**

The pattern of electricity consumption in india has gone tremendous change over the years. the industrial consumption has come down for 60% in 1970 to 45% in 2013-14.This decline in industrial consumption can be accounted to increase in energy efficiency and coservation practices employed by various industries due to technological advancement. The excess consumption of electricity may cause touble later in the future,this pose additional challenges for data analysis.

* **Proposed Solution**

The proposed solution is to develop a PowerBI dashboard that can analyze and visualize real-time electical usage. The dashboard will integrate data from various sources such as u history of electricty usage, public feedback, and graphic data. It will provide a comprehensive view of people behavior, preferences, and trends, enabling government to make informed decisions. The dashboard will be interactive, user-friendly, and customizable, allowing gov-empoyee to tailor it to their specific needs. The real-time analysis capability of the dashboard will enable government to respond promptly to changes in people usage of electricity.This will help to understand people usage of electricity .

* **Feature**
* **Real-Time Analysis**: The dashboard will provide real-time analysis of people usage of electricity.
* **Electric use-Segmentation**: It will segment usage of electricity based on various devices like Mobiles,T.v,and other electronic gadgets.
* **Trend Analysis**: The dashboard will identify and display trends in people usage of electricity .
* **Predictive Analysis**: It will use historical data to predict future usage of electricity.
* **Advantages**
* **Analyse and utilize electricity:** We can utilize the electricity in a proper way so that electricity consumption is reduced .
* **Energy efficiency**: It is essential for reducing energy consumption without sacrificing performance and comfort.
* **Financial savings**:Saving energy helps individuals reduce their energy bills.Thus profit will come.
* **Scope**

The scope of this project is to analyze the usage of electricity in indian state.In this digital era elctricity is the main source of entertainment for humans. but the consumption of electricity increases day by day.so we need to analyze the electricity usage and try to use it efficiencently.For that we use power bi to show us the use of electricity all over india.Each state in india use different range of electricity .so power bi varies the difference with diagrams,graph,chart etc.. power bi helps us to analyze and utilze electricity in a proper way.

**CHAPTER 2**

**SERVICES AND TOOLS REQUIRED**

**2.1 Services Used**

* **Data Collection and Storage Services**: government needs to collect and store usage of electricity in real-time. This could be achieved through services like Azure Data Factory, Azure Event Hubs, or AWS Kinesis for real-time data collection, and Azure SQL Database or AWS RDS for data storage.
* **Data Processing Services**: Services like Azure Stream Analytics or AWS Kinesis Data Analytics can be used to process the real-time data.
* **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**

**USER FRONTEND BACKEND**

|  |  |  |
| --- | --- | --- |
|  | **HTML 5** | **NODEJS 14.0**  **Database** |

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

* **Data Collection**: Real-time customer data is collected from various sources like bank transactions, customer interactions, etc. 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.

This architecture provides a comprehensive solution for real-time analysis of bank customers. However, it’s important to note that the specific architecture may vary depending on the bank’s existing infrastructure, specific requirements, and budget. It’s also important to ensure that all tools and services comply with relevant data privacy and security regulations.

**CHAPTER 4**

**MODELING AND RESULT**

**Manage relationship**

* The 'data1' file contains all the name of states in india.it helps to identify the electricity usage of people in particuar area.



* The 'data2' contains the the info of dates,latitudes,longitudes..which helps us know the exact information we need.



* The tableview is used to see the details of the peope in the state they are in it.we can also change the details in it.



* The model view in power bi desktop is used to design data models with the relation ship editor and it is of prior importance as it helps in showing data from different tables just as using joins in sql.



**Dashboard**



**CONCLUSION**

The project “Analysis of commercial electricity consumption in indian state” using PowerBI has successfully demonstrated the potential of data analytics in finding the usage of electricty.The interactive dashboards and reports have offered a comprehensive view of people data, enabling the identification of patterns and correlations. This has not only improved the efficiency of data analysis but also enhanced the government ability to provide good services to public. 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.

**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. Integrating these predictive analytics into the project could enable the government to anticipate people needs and proactively offer solutions. Furthermore, PowerBI’s capability to integrate with various data sources opens up the possibility of incorporating more diverse datasets for a more holistic view of people. As data privacy and security become increasingly important, future iterations of this project should focus on implementing robust data governance strategies. Additionally, the project could explore the integration of real-time data streams to provide even more timely and relevant insights, leading to improved people satisfaction and loyalty.

**REFERENCES**

<https://medium.com/analytics-vidhya/analysis-of-bank-customers-using-dashboard-in-power-bi-a366f2b3e563>

**LINK**