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CaseStudyReport

DataAnalyticswithPowerBI

"ANALYSIS OF COMMERICAL ELECTRICITY CONSUMPTION"

"Sri Paramakalyani College, Alwarikurichi"

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ABSTRACT

Availability of power is one of the biggest inputs necessary for the sustained growth of any economy. This becomes even more important for a state like TamilNadu, which is one of the most industrialized and urbanized states in India. Over thelast few years, Tamil Nadu has been facing massive power deficits. According to theCEA, the state was expected to have a power deficit of around 18 percentin 2012-13.As a result, in recent times the stateis facinghuge power cuts. On an average of 3-4hours power cuts are being experienced by consumers in the state.Giventhissituationthis paperattempts tolookatthe reasonsfor thegrowing power deficitsinTamil Nadu withthefollowing objectives,

1) To analyze the electricity power in Tamil Nadu,

2) To identify here new able sources in which Tamil Nadu can   improve

3) To examine the growth performance of wind power.

This paper suggests that Tamil Nadu is one state which has fully converted thechallenges into opportunity and ranked first in the country with maximum carbon credit through wind energy generation and in this continued effort to combat environmental degradation and promoting clean energy. So the government work to design and formulate adequate policies in order to ensure energy security and control environment pollution.

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CHAPTER1

INTRODUCTION

1.1 ProblemStatement

A problem statement is a concise summary of the user's needs and specifications that must be met. A problem statement brings the organization together aroundthe user problem, providing everyone a clear goal to work toward. A powerful problem statement is one that is focused on people. We have two person as for the qualitative participants'group. So two problem statements are created based on the user's characteristics and the user's insights."Manar is a student staying at student accommodation with bills who need san application service to push notifications as reminders, to know the daily usage because she is busy doing her project and shedoesn't know how much she consumed "."Samuel is a student staying in sharedaccommodation excluding bills who needs an application service to optimizeconsumption, and getting rewards in paying his bill payment online because hedidn't get any deals on electricity bill payment and to save his usage". Problem statements are used to identify and establish user's goals, and it helps in understanding constraints, and they help us to defined Deliverables.

1.2 ProposedSolution

The proposed solution is to develop a PowerBI dashboard that can analyze andvisualize real-time customerdata.The dashboard willintegrate data fromvarioussources such as transaction history, customer feedback, and demographic data. It willprovide a comprehensive view of customer behavior, preferences, and trends, enabling electricity consumption to make informed decisions. The dashboard will be interactive, user-friendly, and customizable, allowing banks to tailor it to their specificneeds. The real-time analysis capability of the dashboard will enable banks to respondpromptly to changes in customer behavior or preferences, identify opportunities forcross-selling and up-selling, and tailor their products and services to meet customerneeds.

1.3 Feature

Electricity has two primary attributes: **Voltage and Current**. Voltage andcurrent are separate properties, but are interrelated in electronic circuits. Both mustbepresent forproper circuitoperation.

Advantages

a. Easily accessible and produced: Using a wide variety of renewable and non-renewablesourceofenergyinproducingelectricitymakeiteasytoassemble.Everyonecan accesselectricity.

b. Renewable source of energy: Electricity is generated by humans by variousmethods regularly to fulfill their electric needs of humans. Therefore, it is considered arenewableenergysourceas it canbeproduceddaily.

c. Easytomanageandtransport:Withproperplanningormanagement,electricity transmission is possible on a large scale over a long distance. Electricity cantransportandcoverlong distancesthroughmediumslikewire.

d. Versatileandeasytotransform:Electricityisversatileasitcanbetransformedinto anothertypeofenergyaccordingtouserutilization.Itcanbeconverted into motion (via engine), light (lightning a bulb), and heat (lightning anelectricradiator).

e. Reducesgreenhouseemission:Electricitycanbeproducedviarenewableenergy sources such as wind and solar, which are much cleaner and environmentallyfriendly. Due to this, electricity and its production process don't produce greenhousegasemissions.

f. More efficient and convenient: Electricity is a convenient and efficient energysource, making many appliances and devices functional. It has minimal energy loss inthegenerationprocessandtransmissionover longdistances.

g. Have lower maintenance:Once the setting of electricity is done, it should onlybe needed to maintain at regular intervals when electric equipment (bulb, tube light &other)isdamagedwithtime.Electricvehiclesarecheapertomaintainduetonooil

changes,fewerpartstoweardown,andenginelesstomaintainbecauseelectriccarsdonot have internal combustionengines.

h. It requires less labor force: Implementing electricity requires labor, but only2-3hoursisenough.It doesn't needaforceofwork.

i. Noemissionofwasteorgasesfromthehydroelectricityplant:Inhydroelectric itypowerplants,waterproduceselectricity,andnofossilfuelorsmokestacks are involved. This plant doesn't make direct greenhouse gas emissions astheydon't release pollutantsintotheair.

j. It can be set up in many sizes : The generation capacity of electricity can bemeasured in multiples of kilowatts like gigawatts(GW) and megawatts(MW). The flowof electric current can be controlled according to the user's needs. For example: About2KW or 3 KW of electricity is used in the home, but a commercially significant amountof electricityisused.

1.4 Scope

Energy Consumption covers wide-ranging topics related to energyefficiency, energy savings, energy consumption, energy sufficiency, and energytransition in all sectors across the globe.Coverage includes energy efficiency policiesat all levels of governance enabling social, organizational, and economic factors ofsufficient and efficient behavior and decisions; analysis and modeling of energyefficiency performance, measures, policies, outcomes, and impacts; energymanagement systems and energy services; the role of energy efficiency and demand-side management in energy planning, energy markets and risk assessment; localsustainableenergyplanning;energybehavior;acceptabilityofpolicy,technology,and new energy systems; and emerging technologies and approachesto improve energyefficiency.

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CHAPTER2

SERVICESAND TOOLSREQUIRED

2.1 ServicesUsed

- Electricity is an essential part of modern life and important to the U.S.economy. People use electricityfor lighting, heating, cooling, and refrigerationand for operating appliances, computers, electronics, machinery, and publictransportationsystems.
- In the most basic terms, Consumption is the total amount of energy used in thebillingperiod, andDemandisthehighestmomentaryrateof consumption.

2.2 Tools and Software

usedTools:

- **PowerBI**: The main tool for this project is PowerBI, which will be used tocreateinteractivedashboardsforreal-timedatavisualization.
- **Power Query**: This is a data connection technology that enables you todiscover,connect,combine,andrefinedataacrossawidevarietyofsources.

SoftwareRequirements:

- **PowerBI Desktop**: This is a Windows application that you can use to createreportsandpublishthemtoPowerBI.
- **PowerBI Service**: This is an online SaaS (Software as a Service) service thatyouusetopublishreports,createnewdashboards,andshare insights.
- **PowerBIMobile**:Thisisamobileapplicationthatyoucanusetoaccessyourreports sand dashboardsonthego.

CHAPTER3

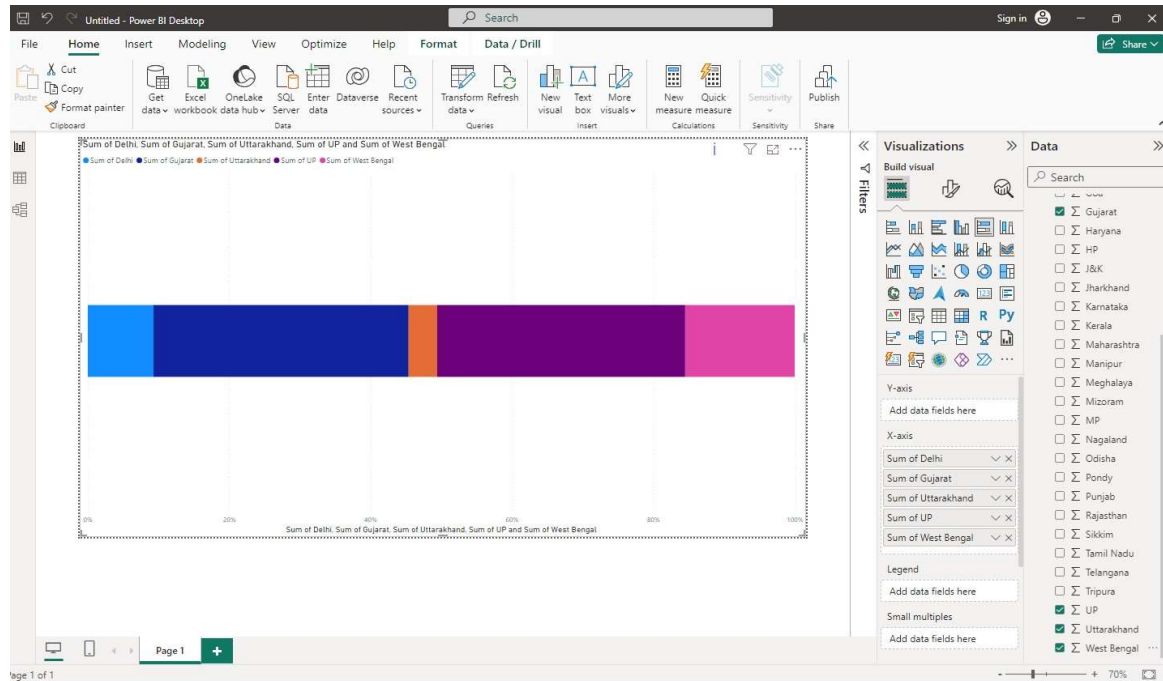## MODELINGANDRESULT

Managerelationship

Fig1.1claculatetheelectricitybetweenthestateofIndiausinggraph

In this graph,they tell about the uses of electricity consumption of the state oftamilnadu. In graph they compare the more state.In x axis Delhi, Gujarat, UP,Uttarakhand, West Bengal. In this graph Gujarat and UP is same in the electricityconsumption. Comparing the Gujarat and UP, the Uttarakhand is low electricityconsumption.
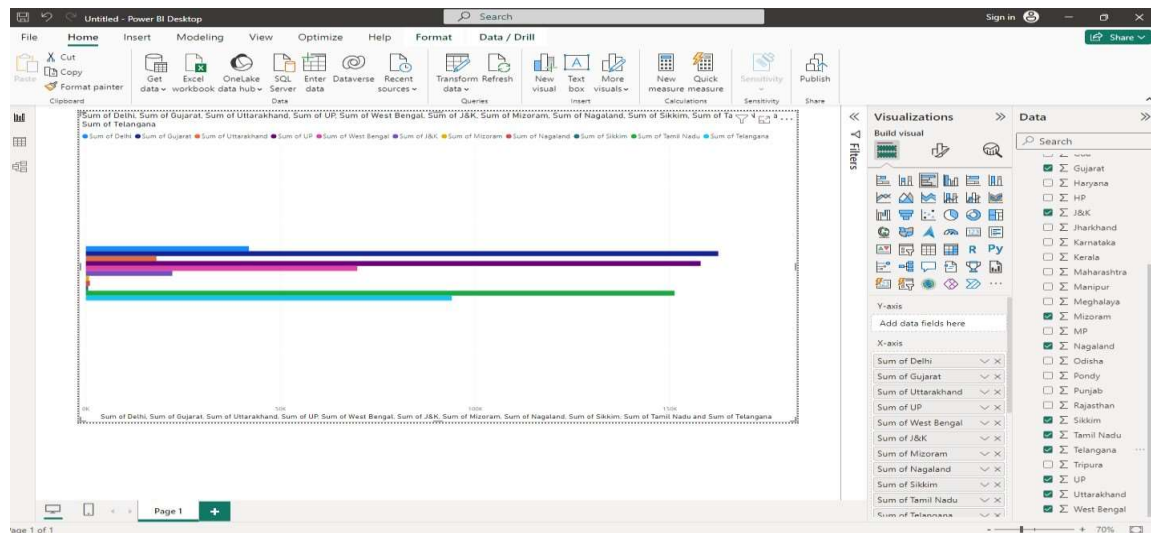
Fig1.2Electricityconsumptionusingbargraph

In this graph, they uses the state of Delhi, Gujarat, Uttarakhand, UP, WestBengal, J&K, Mizoram, Nagaland, Sikkim, Tamilnadu, Telangana. In this graph, FirstJ&K reaches the point of above 150k , second Tamilnadu reaches the 150k points,third Delhi reaches the 90k point of electricity consumption. The state of Gujaratreachestheno pointof theelectricityconsumption.
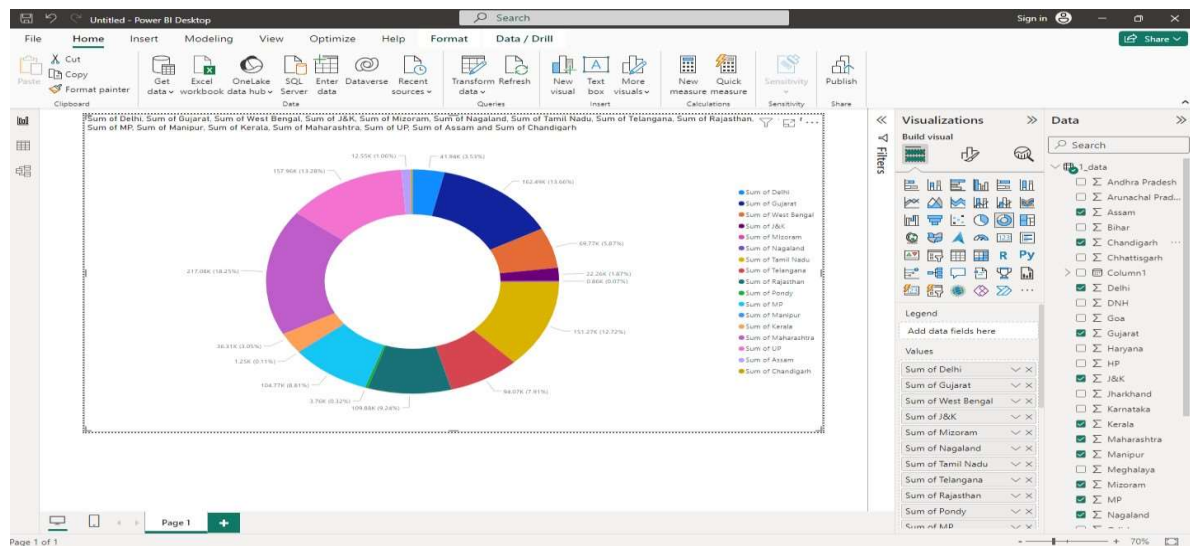

Fig1.3ElectricityconsumptionusingDonutgraph

In this Donut graph, more states are used here. The Delhi reaches the3.53%,Gujarat reaches the 13.66% , West Bengal reaches the 5.87% and so on. In thisgraph, the highest point reaches the Maharashtra and the percentage is 18.25% andthe lowest point reaches the UP and the percentage is 1.87% of the electricityconsumption.
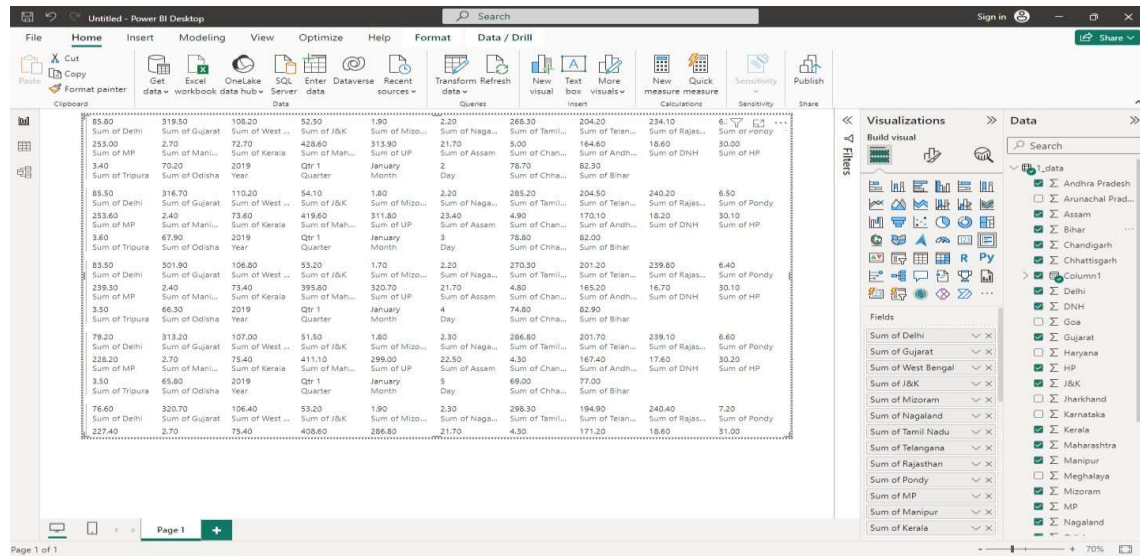

Fig1.4Electricityconsumptionusingthetextgraph

In this graph, they uses the all states of India to calculate the electricityconsumption of the house, Offices and so on. In this graph,they have to notice theyear,Quarter,Month,Dayandsumof thestate(Tamilnadu)names.

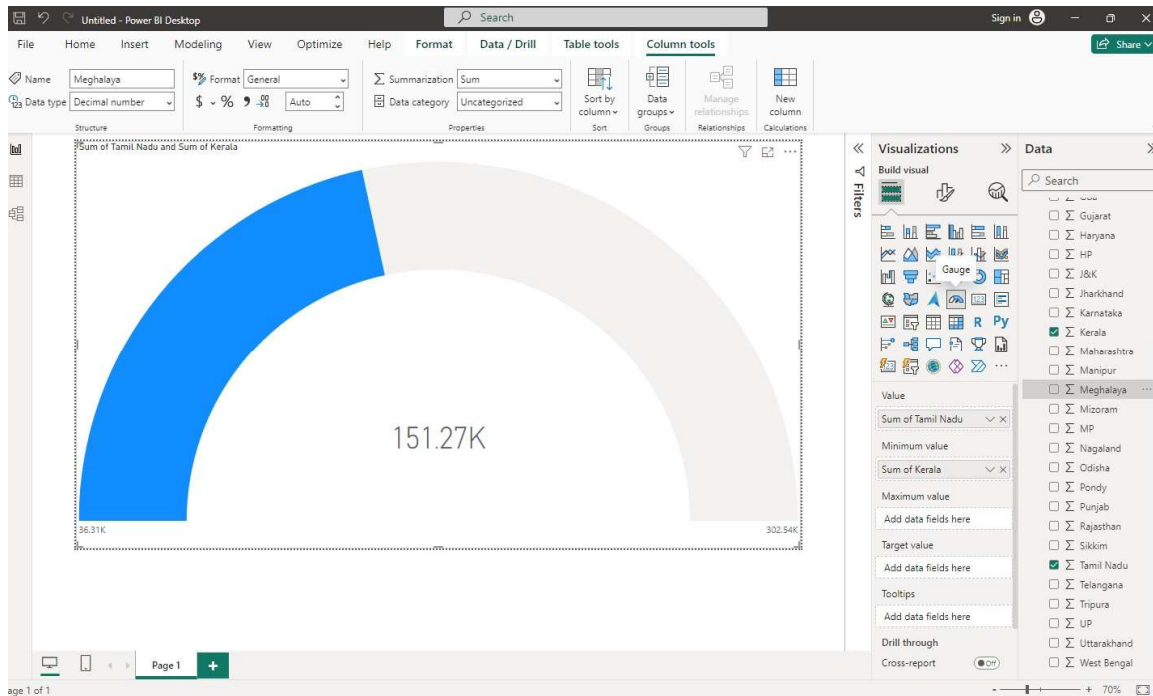Fig1.5ElectricityconsumptionusingGaugegraph

In this gauge graph, thay compare only two states that is TamilNadu andKerala. The TamilNadu reaches the point of 36.31k and the Kerala reaches the point302.54k.Themidpointoftheelectricityconsumptionofthestatesare151.27k.
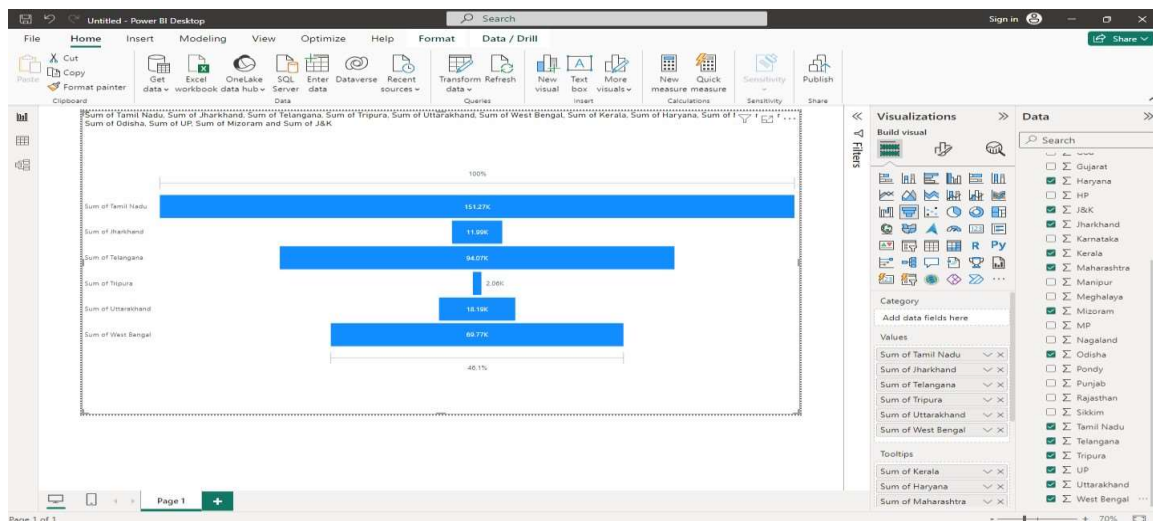

Fig1.5Electricity consumptionusesthegraph

In this graph, the graph uses the state of Tamil Nadu, Jharkhand, Telangana,Tripura, Uttarakhand, West Bengal. The total percentage of the graph is 100% isreduce the point upto 46.7% of the electricity consumption. In highest place TamilNadureachesthepoint51.27kandthelowestplaceTripurareachesthepoint 2.06
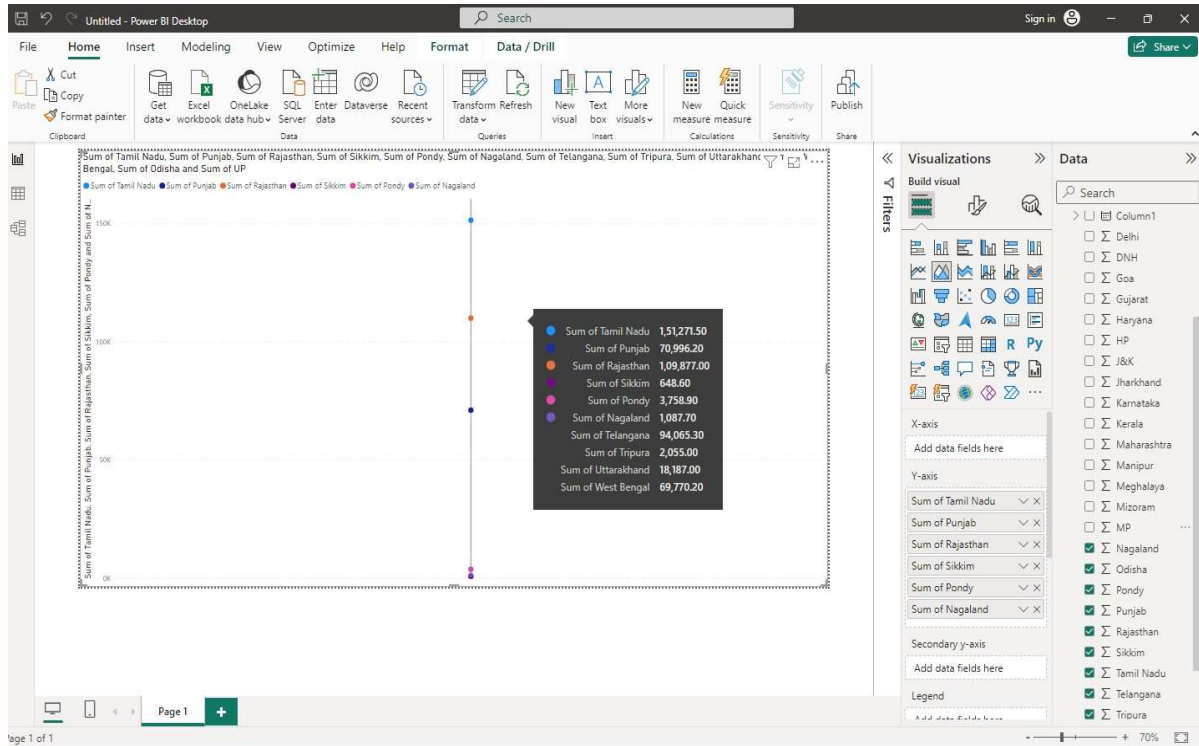
Fig1.6Electricityconsumptionusingthelinegraph

   In this graph, the states are pointed in dots and the value is given in the size ofthe line graph. The highest electricity consumption is Rajasthan the point is 109877andthelowest electricityconsumptionis648.60.

CONCLUSION

Conservation of energy is an action made to decrease energy consumption byany means. This can be done by using less energy. It is important for saving ournatural resources. Current through a given area of a conductor is the net charge thatpasses per unit time through the conductor. To keep up a gradual current, we musthave a circuit within which an electrical phenomenon occurs from lower to highermechanical energy. Electricity is both a basic part of nature and one of the most widelyused forms of energy. The electricity that we use is a secondary energy source becauseit is produced by converting primary sources of energy such as coal, natural gas,nuclear energy, solar energy, and wind energy into electrical power. Cookingappliances, such as electric ovens and stoves, consume a substantial amount of energy,especially during extended cooking sessions. Efficient meal planning and using themicrowave or slow cooker when possible can help reduce your energy usage in thekitchen.

FUTURESCOPE

The future scope of this project is vast. With the advent of advanced analytics andmachinelearning,PowerBIcanbeleveragedtopredictfuturetrendsbasedonhistorical data. Integrating these predictive analytics into the project could enable thebanktoanticipatecustomerneedsandproactivelyoffersolutions.Furthermore,PowerB I's capability to integrate with various data sources opens up the possibility ofincorporating more diverse datasets for a more holistic view of customers. As dataprivacy and security become increasingly important, future iterations of this projectshould focus on implementing robust data governance strategies. This would ensurethe secure handling of sensitive customer data while complying with data protectionregulations. Additionally, the project could explore the integration of real-time datastreams to provide even moretimely and relevant insights. This could potentiallytransform the way banks interact with their customers, leading to improved customersatisfactionandloyalty.

REFERENCES

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