



Tech Saksham

Case Study Report

Data Analytics with Power BI

“ 360-degree Business Analysis of Online Delivery Apps using Power BI” [SRI](#)

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ABSTRACT

In the competitive landscape of food delivery services, operational efficiency is paramount for success. Zomato, a leading global platform for food delivery and restaurant discovery, recognizes the significance of optimizing its delivery operations to meet customer expectations and maintain a competitive edge. This abstract presents a case study on the implementation and impact of the 360 Delivery initiative on Zomato, leveraging the analytical capabilities of Microsoft's Power BI.

The 360 Delivery strategy encompasses a holistic approach to enhance various facets of the delivery process, including logistics, route optimization, delivery time estimation, and customer experience management. Leveraging Power BI, Zomato integrates data from diverse sources such as order history, delivery routes, customer feedback, and real-time traffic updates to derive actionable insights.

This case study explores how Zomato utilizes Power BI's robust analytical features to gain deeper visibility into its delivery operations. Through interactive dashboards and data visualization tools, Zomato's management gains real-time insights into key performance metrics such as delivery times, driver efficiency, order volumes, and customer satisfaction scores. These insights enable data-driven decision-making, allowing Zomato to identify bottlenecks, optimize routes, allocate resources efficiently, and improve overall delivery performance.

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CHAPTER 1

INTRODUCTION

Problem Statement

Zomato, a prominent player in the food delivery industry, faces the challenge of optimizing its delivery operations to meet the ever-growing demands of customers while maintaining cost-effectiveness and efficiency. Despite having a vast network of delivery partners and a robust technological infrastructure, Zomato encounters various operational hurdles such as unpredictable traffic conditions, inefficient routing, fluctuating order volumes, and inconsistent delivery times.

These challenges pose a significant risk to Zomato's competitiveness and customer satisfaction levels. Without an effective mechanism to streamline its delivery processes, Zomato risks losing customers to competitors who can offer faster and more reliable delivery services. Additionally, inefficient delivery operations result in increased operational costs, reduced profitability, and potential reputational damage.

Although Zomato collects vast amounts of data from various sources, including order histories, delivery routes, and customer feedback, the company lacks a cohesive analytics solution to extract actionable insights and optimize its delivery operations effectively. Existing reporting systems fail to provide real-time visibility into key performance metrics, hindering proactive decision-making and preventing Zomato from addressing operational inefficiencies promptly.

Thus, the problem statement revolves around the need for a comprehensive analyticssolution that

leverages Zomato's rich data assets to enhance its delivery operations. This solution should enable Zomato to analyze delivery performance metrics, identify

bottlenecks, optimize delivery routes, forecast demand patterns, and improve overall operational efficiency.

Proposed Solution

The proposed solution is to develop a PowerBI dashboard that can analyze and visualize real-time customer data. The dashboard will integrate data from various sources such as transaction history, customer feedback, and demographic data. It will provide a comprehensive view of customer behavior, preferences, and trends, enabling banks to make informed decisions. The dashboard will be interactive, user-friendly, and customizable, allowing banks to tailor it to their specific needs. The real-time analysis capability of the dashboard will enable banks to respond promptly to changes in customer behavior or preferences, identify opportunities for cross-selling and up-selling, and tailor their products and services to meet customer needs.

Feature

Real-Time Analysis: The dashboard will provide real-time analysis of customer data.

Customer Segmentation: It will segment customers based on various parameters like online delivery option, table booking options, rating, etc.

Trend Analysis: The dashboard will identify and display trends in customer behavior.

Predictive Analysis: It will use historical data to predict future customer behavior.

Advantages

Data-Driven Decisions: Zomato can make informed decisions based on real-time data analysis.

Improved Customer Engagement: Understanding customer behavior and trends can help Zomato engage with their customers more effectively.

Scope

Food Delivery: Zomato started as a restaurant search and discovery platform but quickly expanded into food delivery services. It allows users to order food online from a wide range of restaurants and delivers it to their doorstep.

Restaurant Aggregator: Zomato serves as a comprehensive platform for restaurant discovery, allowing users to explore menus, read reviews, and find information about restaurants, including location, contact details, and operating hours.

Cloud Kitchen Operations: Zomato has ventured into the cloud kitchen business, where it operates its own kitchens to prepare food exclusively for delivery, often under various brand names.

Food Ordering Platform: Besides delivery, Zomato also offers users the option to place orders



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for pickup directly from restaurants.

Table Reservations: Zomato allows users to make table reservations at restaurants through its platform, streamlining the dining experience.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

Services Used

Data Collection and Storage Services: Zomato need to collect and store customer data 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

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.

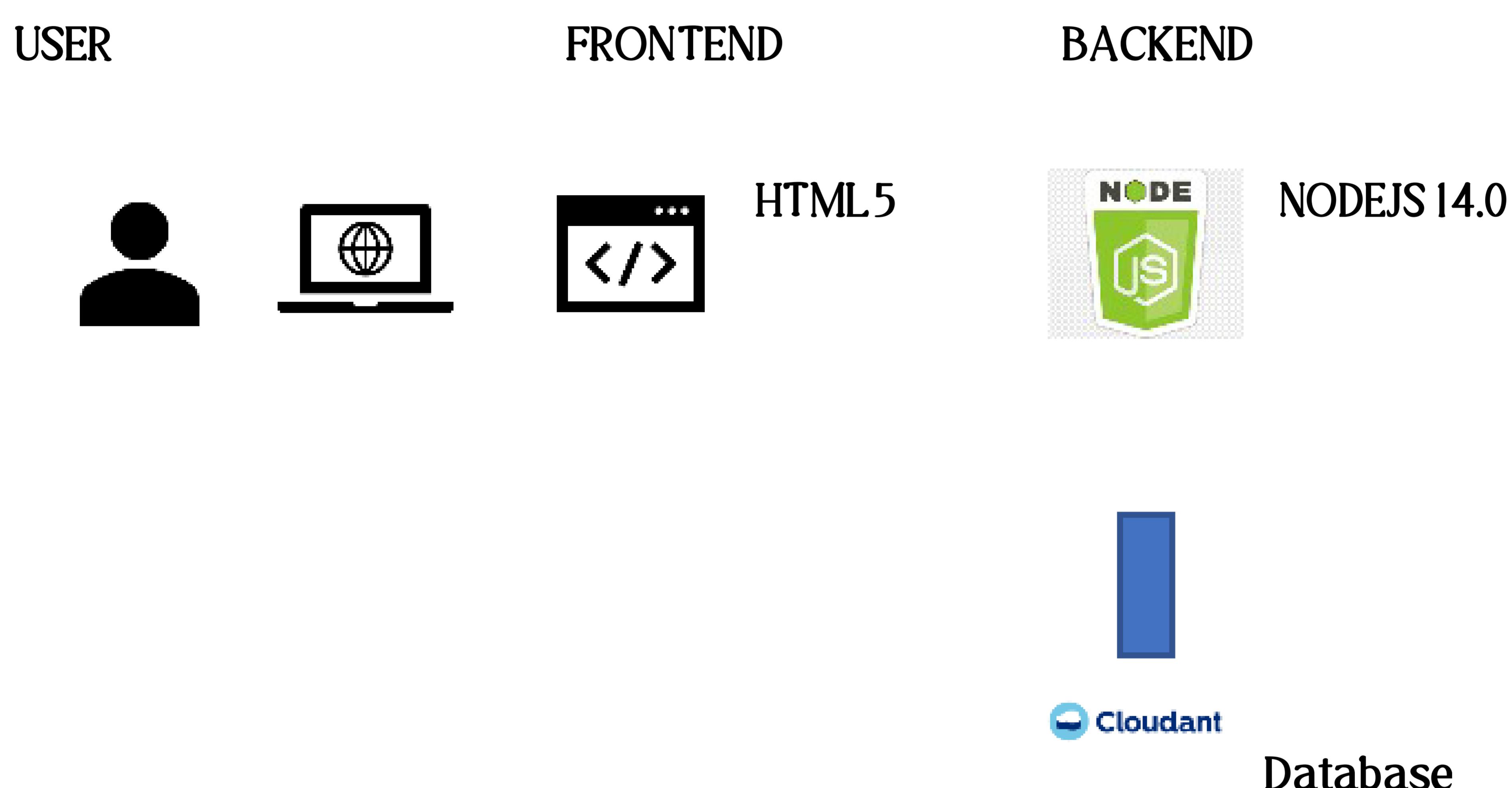
PowerBI Service: This is an online SaaS (Software as a Service) service that you use to publish reports, create new dashboards, and share insights.

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

CHAPTER 3

PROJECT ARCHITECTURE

Architecture



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

1. Data Collection: Real-time customer data is collected from various sources like online delivery, customer interactions, etc. This could be achieved using services like Azure Event Hubs or AWS Kinesis.
2. Data Storage: The collected data is stored in a database for processing. Azure SQL Database or AWS RDS can be used for this purpose.
3. Data Processing: The stored data is processed in real-time using services like Azure Stream Analytics or AWS Kinesis Data Analytics.
4. 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, rating etc.
5. 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.
6. Data Access: The dashboards created in PowerBI can be accessed through PowerBI Desktop, PowerBI Service (online), and PowerBI Mobile.

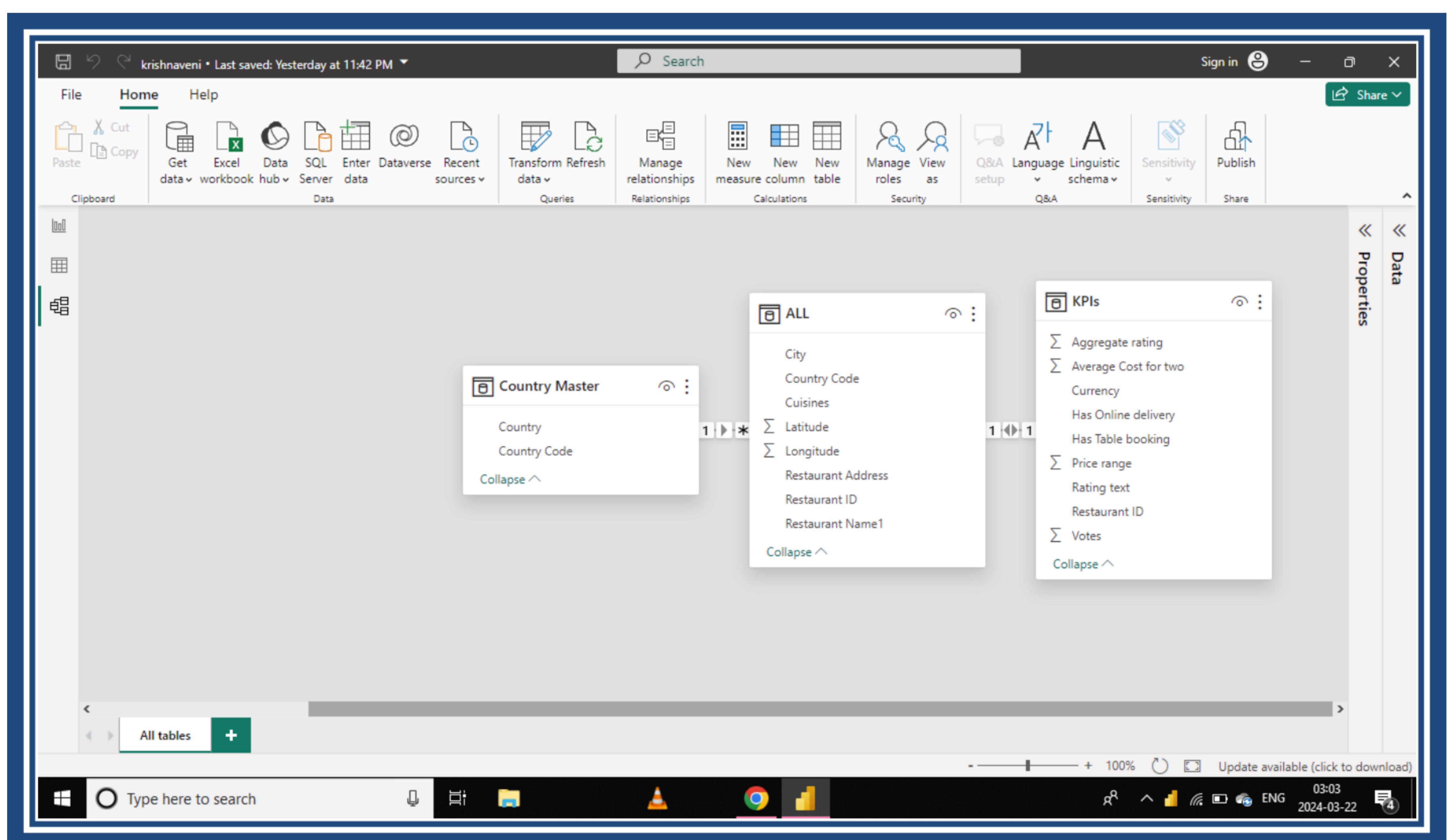
This architecture provides a comprehensive solution for real-time analysis of bank customers. However, it's important to note that the specific architecture may vary depending on the bank's existing infrastructure, specific requirements, and budget. It's also important to ensure that all tools and services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

CHAPTER 4

MODELINGANDRESULT

Manage relationship

The “ KPIs” file will be used as the main connector as it contains most key identifier (Country , Country code) which can be use to relates the 6 data files together. The “ district” file is use to link the client profile geographically with “ Restaurants id”



The screenshot shows the Microsoft Power BI Data Studio interface. The top navigation bar includes File, Home, Help, and various data import and management tools. The main workspace displays two tables: "Country Master" and "KPIs". The "Country Master" table contains columns for Country and Country Code. The "KPIs" table contains columns for Aggregate rating, Average Cost for two, Currency, Has Online delivery, Has Table booking, Price range, Rating text, Restaurant ID, and Votes. A "Properties" panel on the right side shows relationships between the tables. The bottom taskbar includes a search bar, system icons, and a date/time indicator.

Merge

Select a table and matching columns to create a merged table.

Zomato Africa

Restaurant ID	Country Code	City	Restaurant Name,Address	Locality
18395463	189	Cape Town	The Butcher's Wife,15 Belgravia Road, Athlone, Cape T...	Athlone
18337845	189	Cape Town	Coco Saffa,Ground Floor, Cavendish Square, Claremont...	Cavendish Square, C...
6401732	189	Cape Town	La Parada,107 Bree Street, CBD, Cape Town	CBD
6401060	189	Cape Town	Jason Bakery,185 Bree Street, CBD, Cape Town	CBD

KPIs

Restaurant ID	Average Cost for two	Currency	Has Table booking	Has Online delivery	Price range	Aggr
18395463	294	Rand(R)	No	No	3	
18337845	300	Rand(R)	No	No	4	
6401732	360	Rand(R)	No	No	4	
6401060	180	Rand(R)	No	No	2	

Join Kind: Left Outer (all from first, matching from second)

Use fuzzy matching to perform the merge

Fuzzy matching options

OK Cancel

PREVIEW DOWNLOADED ON WEDNESDAY 03:02 2024-03-22

9 COLUMNS, 60 ROWS Column profiling based on top 1000 rows

Type here to search

In Power BI, editing relationships allows users to adjust how tables are linked together, which is crucial for accurate data analysis. This feature enables users to establish or modify connections between tables based on common fields, ensuring data integrity and enabling seamless querying across multiple tables. By editing relationships, users can define relationships as one-to-one, one-to-many, or many-to-many, depending on the nature of the data. This flexibility empowers users to refine their data models, resolve data inconsistencies, and optimize performance. Overall, editing relationships in Power BI is a fundamental aspect of data modeling, enabling users to create robust and efficient data structures that support their analytical needs.

Manage relationships

Active	From: Table (Column)	To: Table (Column)
<input checked="" type="checkbox"/>	Hole Data (Country Code)	Country Master (Country Code)
<input checked="" type="checkbox"/>	Hole Data (Restaurant ID)	KPIs (Restaurant ID)
<input type="checkbox"/>	Zomato Asia (Country Code)	Country Master (Country Code)
<input checked="" type="checkbox"/>	Zomato Asia (Restaurant ID)	KPIs (Restaurant ID)
<input type="checkbox"/>	Zomato Europe (Country Code)	Country Master (Country Code)
<input checked="" type="checkbox"/>	Zomato Europe (Restaurant ID)	KPIs (Restaurant ID)
<input type="checkbox"/>	Zomato NAM (Country Code)	Country Master (Country Code)
<input checked="" type="checkbox"/>	Zomato NAM (Restaurant ID)	KPIs (Restaurant ID)
<input type="checkbox"/>	Zomato Oceania (Country Code)	Country Master (Country Code)
<input checked="" type="checkbox"/>	Zomato Oceania (Restaurant ID)	KPIs (Restaurant ID)
<input type="checkbox"/>	Zomato SAM (Country Code)	Country Master (Country)
<input checked="" type="checkbox"/>	Zomato SAM (Restaurant ID)	KPIs (Restaurant ID)

New...

Autodetect...

Edit...

Delete

Close

Condition Column:

```

1 Region = IF(['Country Master'[Country Code]=1,"Asia",IF(['Country Master'[Country Code]=191,"Asia",IF(['Country Master'[Country Code]=94,"Asia",
IF(['Country Master'[Country Code]=162,"Asia",IF(['Country Master'[Country Code]=166,"Asia",IF(['Country Master'[Country Code]=184,"Asia",
IF(['Country Master'[Country Code]=208,"Asia",IF(['Country Master'[Country Code]=214,"Asia",IF(['Country Master'[Country Code]=215,"Europe",IF
(['Country Master'[Country Code]=216,"NAM",IF(['Country Master'[Country Code]=37,"NAM",IF(['Country Master'[Country Code]=14,"Oceania",IF
(['Country Master'[Country Code]=148,"Oceania",IF(['Country Master'[Country Code]=30,"SAM",IF(['Country Master'[Country Code]=189,
"Africa"))))))))))]))])

```

This query is used to connect the another coloums.use this query to split the region from the exiting data.then the data visualization is much better. In Power BI, conditions are utilized extensively to manipulate, filter, and format data. These

conditions can be applied in various aspects of Power BI development, such as filtering data displayed in visuals, creating calculated columns based on specific criteria, applying conditional formatting to visuals, defining measures with dynamic logic, transforming data in the Power Query Editor, implementing hierarchical filtering, and parameterizing queries for interactive filtering. Essentially, conditions in Power BI empower users to tailor their data analysis, visualization, and transformation processes to suit their specific needs, enabling them to derive valuable insights and make informed decisions effectively.

Country Code	Country	Region
94	Indonesia	Asia
191	Sri Lanka	Asia
214	UAE	Asia
1	India	Asia
30	Brazil	SAM
14	Australia	Oceania
208	Turkey	Asia
189	South Africa	Africa
216	United States	NAM
215	United Kingdom	Europe
162	Phillipines	Asia
166	Qatar	Asia
37	Canada	NAM
148	New Zealand	Oceania
184	Singapore	Asia

In this data the new column added named Region to identify the country with the help of country code. every country code have a unique region so easy to access the slicer.



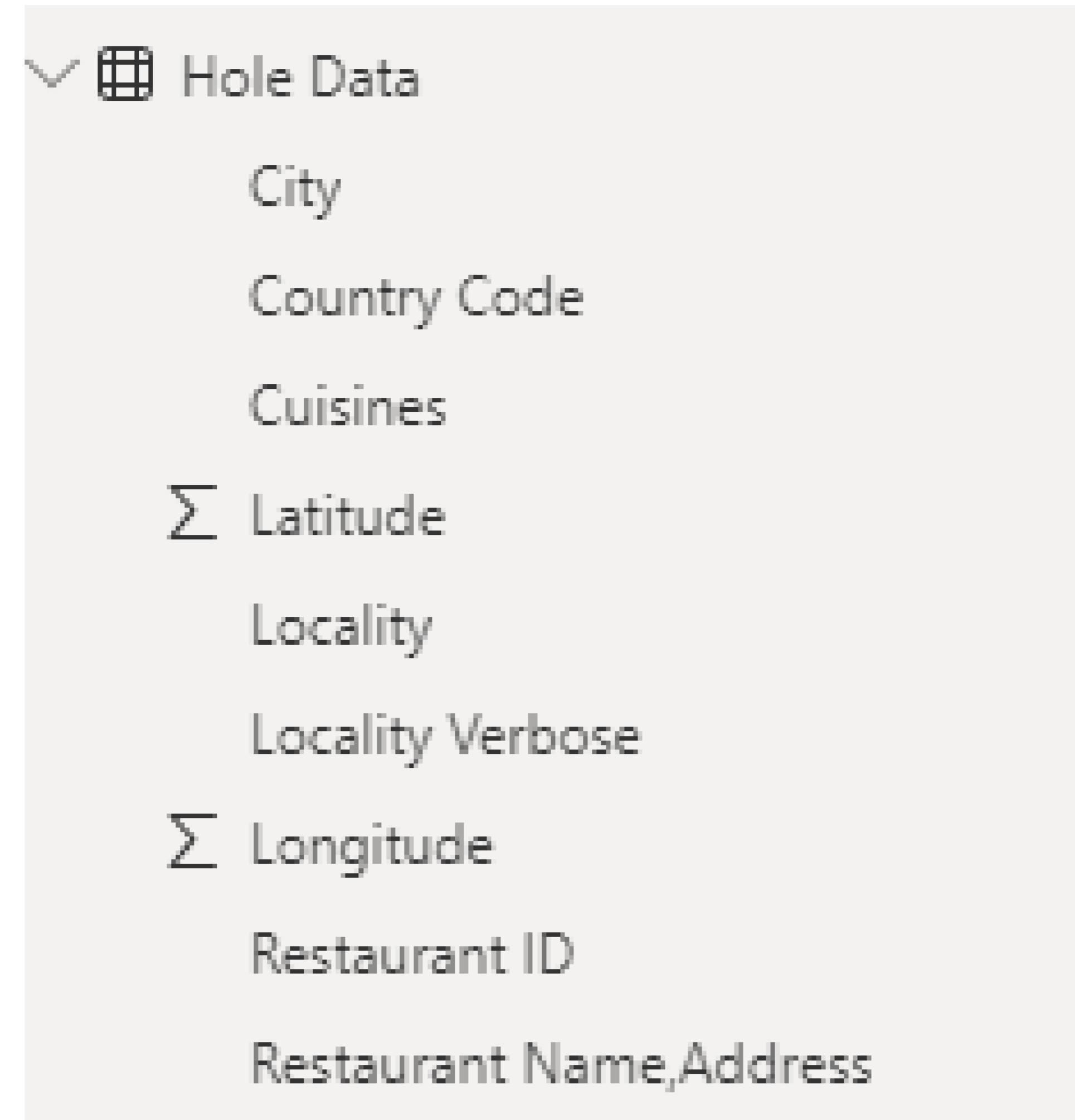
Changing the order of Region name at Power Query

Duplicate th “ /region” the spl colum usin spac a delimiter. Then merge column by Region and direction. Refer to applied steps for details.

	1 ² ₃	Country Code	A ^B _C	Country
1		94		Indonesia
2		191		Sri Lanka
3		214		UAE
4		1		India
5		30		Brazil
6		14		Australia
7		208		Turkey
8		189		South Africa
9		216		United States
10		215		United Kingdom
11		162		Phillipines
12		166		Qatar
13		37		Canada
14		148		New Zealand
15		184		Singapore

Edit the columns:

In “ country master” datas there are so many duplicate columns. Use the condition columns to remove the duplicate columns and null values



Combine data set using power query:

Create a new dataset named “ Whole data” and combine all the existing dataset into

One single dataset.it is used to access the visual more effectively .The main datasetNamed as

Wholedata .it consist 6 type of dataset named as “ Zomato Africa” ,

“ Zomato asia” ; “ Zomato europe” ; “ Zomato oceania”
; “ zomato NAM” ; “ Zomato sa”

,

krishnaveni • Last saved: Yesterday at 11:42 PM

Search Sign in Share

File Home Insert Modeling View Optimize Help

Cut Copy Format painter Paste Get data workbook hub Data SQL Server Enter data Dataverse Recent sources Transform Refresh data New visual Text box More visuals Insert New measure Quick Sensitivity measure Calculations Sensitivity Publish

360 -degree Business of Zomato Delivery App using Power BI

Restaurant data

- Count of Country: 15
- Count of City: 137
- Count of Restaurants: 9491
- Count of Cuisines: 9482

Count of Restaurant by City

New Deli: 5K
Gurgaon: 949K
Faridab.: 949K
Ghazi.: 949K
Albany: 949K
Ahmedabad: 949K
Bhubanesh.: 949K
Guwahati: 949K
Lakshkar.: 949K
Agra Ch.

Count of Restaurant ID by Has Table booking

Has Table boo... (12.12%)
No (87.88%)

Count of Cuisines by Restaurant ID

Count of Restaurant ID by City

New Delhi: 5K
Gurgaon: 9491
Faridab.: 9491
Ghaz.: 9491
Albany: 9491
Ahmedabad: 9491
Bhubanesh.: 9491

Count of Cuisines by Country

India: 100%
United States: 95%
United Ki.: 95%
South Af.: 95%
UAE: 95%
New Zeal.: 95%
Turkey: 95%
Australia: 95%
Philippines: 95%
Indonesia: 95%
Qatar: 95%

Filters Visualizations Data

Build visual

Filters on this page Add data fields here

Filters on all pages Add data fields here

Values Add data fields here

Drill through Cross-report Off

Keep all filters On

Restaurant ID is (All)

Page 1 +

Type here to search 03:17 2024-03-22 4

Update available (click to download)

DASHBOARD

CONCLUSION

The project “ Real-Time Analysis of Zomato Customers” using PowerBI has successfully demonstrated the potential of data analytics in the Food sector. The real-time analysis of customer data has provided valuable insights into customer behavior, preferences, and trends, thereby facilitating informed decision-making. The interactive dashboards and reports have offered a comprehensive view of customer data, enabling the identification of patterns and correlations. This has not only improved the efficiency of data analysis but also enhanced the zomato ability to provide personalized services to its customers. 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

In the coming years, Zomato is poised to expand its scope beyond its current offerings, driven by a combination of technological innovation, strategic partnerships, evolving consumer demands. While continuing to strengthen its core food delivery and restaurant discovery services, Zomato is likely to explore new avenues for growth, including vertical integration into food production and supply chain management. International expansion remains a significant opportunity, with emerging markets presenting untapped potential for the company. Diversification into adjacent sectors such as grocery delivery and alcohol delivery, along with a heightened focus on sustainability and health-conscious options, could further broaden Zomato's appeal. Continued investment in technology, including artificial intelligence and machine learning, will enable Zomato to enhance its platform's capabilities and personalized experiences to users. Strategic partnerships and collaborations with other industry players may unlock synergies and create new revenue streams. Additionally, data monetization efforts leveraging Zomato's rich dataset could provide valuable insights to businesses and advertisers. As Zomato navigates these opportunities and challenges, its ability to innovate and adapt will be pivotal in shaping its future trajectory in the dynamic landscape of food delivery and hospitality services.

REFERENCES

<https://youtu.be/ZgzGqoq3Xuc?si=ClRH1JTMjVwfV3VT>



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