Case Study Report

“ 360-Degree Business Analysis of Online Delivery Apps using PowerBI”

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ABSTRACT

The online delivery industry is witnessing exponential growth, driven by evolving consumer preferences, technological advancements, and changing market dynamics. In this context, harnessing the power of data analytics is crucial for online delivery platforms to stay competitive, optimize operations, and enhance customer experiences. Power BI, a leading business intelligence tool, offers a comprehensive suite of features and capabilities for analyzing, visualizing, and deriving actionable insights from diverse datasets. This abstract explores the application of Power BI in the online delivery sector, focusing on how it can empower businesses to make informed decisions, streamline delivery operations, and drive growth. Through advanced analytics, real-time monitoring, and interactive dashboards, Power BI enables online delivery platforms to optimize delivery routes, forecast demand, personalize customer experiences, and improve overall efficiency. Moreover, by leveraging Power BI's intuitive interface and self-service analytics capabilities, stakeholders across the organization can access and explore data-driven insights to drive continuous improvement and innovation. With Power BI as a strategic ally, online delivery businesses can navigate the complexities of the modern marketplace, adapt to evolving customer needs, and capitalize on emerging opportunities for success.

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CHAPTER 1

INTRODUCTION

1.1 Problem Statement:

Developing an efficient and user-friendly Online delivery application using powerBI integration.

1.2 Background:

The online delivery industry has witnessed tremendous growth, with customers increasingly relying on digital platforms to order goods and services. However, managing and analyzing the vast amount of data generated by these platforms can be challenging. Utilizing Power BI, a powerful business intelligence tool, offers the opportunity to streamline data analysis and enhance decision-making processes for online delivery businesses.

1.3 Key Features:

1. **Real-time Order Tracking:** Enable customers to track the status of their orders in real-time,

providing transparency and improving customer satisfaction.

2. **Delivery Performance Analytics:** Analyze delivery metrics such as delivery times, routes, and efficiency to identify areas for optimization and improvement.
3. **Customer Feedback Analysis:** Collect and analyze customer feedback to gain insights into service quality and identify areas for enhancement.
4. **Inventory Management:** Monitor inventory levels, track product movement, and generate inventory reports to optimize stock levels and prevent stockouts.
5. **Predictive Analytics:** Utilize predictive modeling techniques to forecast demand, anticipate customer preferences, and optimize resource allocation.

1.4 Challenges:

1. **Data Integration**: Integrating data from various sources such as order management systems, delivery tracking systems, and customer feedback platforms into Power BI for analysis.
2. **Real-time Data Processing:** Ensuring timely processing and visualization of real-time data to provide up-to-date insights to users.

3. **User Interface Design:** Designing an intuitive and user-friendly interface for both customers and administrators to access and interact with the application's features and Power BI dashboards.
4. **Security and Privacy:** Implementing robust security measures to protect sensitive data and ensure compliance with data privacy regulations such as GDPR.
5. **Performance Optimization:** Optimizing application performance to handle large volumes of data and concurrent user requests without compromising speed or reliability.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 **SERVICES USED**

Creating a Power BI report for services in online delivery apps involves visualizing various aspects of the services offered, such as types of services, service ratings, service usage patterns, etc. Here's a basic guide on how you might structure such a report:

1. Data Collection and Preparation:

- Gather data from your online delivery app database, which may include tables such as Orders, Customers, Services, Ratings, etc.
- Clean and preprocess the data as necessary, ensuring data quality and consistency.

2. Dashboard Layout:

- Create a dashboard layout with sections for different aspects of services in your online delivery app.

3. **Key Metrics:**

1. Display key metrics related to services, such as:
2. Total number of orders
3. Total revenue generated from services
4. Average order value
5. Average service rating

4. **Service Type Analysis:**

Visualize the distribution of different service types offered on your platform using charts like pie charts or bar charts.

Include filters to allow users to drill down into specific service types if needed.

5. Service Ratings Analysis:

- Show the distribution of service ratings using a histogram or box plot.
- Compare average ratings across different service types or regions.
- Identify trends in ratings over time.

6. Service Usage Patterns:

- Analyze service usage patterns over time using line charts or area charts.
- Identify peak hours or days for service usage.
- Compare usage patterns for different service types.

7. Customer Segmentation:

- Segment customers based on their usage patterns or preferences.
- Use clustering algorithms or simple filters to segment customers.
- Analyze the behavior and preferences of different customer segments.

8. Geospatial Analysis:

- Visualize the geographical distribution of service usage using maps.
- Identify regions with high or low service demand.
- Overlay other relevant data such as population density or income levels for deeper insights.

9. Trend Analysis:

- Analyze trends in service demand, revenue, or customer satisfaction over time.
- Use trend lines or trend analysis tools to identify patterns and make forecasts.

10. Drill-down and Interactivity:

- Enable drill-down capabilities to allow users to explore data at different levels of detail.
- Implement interactive filters and slicers to facilitate exploration and analysis.

11. Mobile Optimization:

- Optimize your Power BI report for mobile devices to ensure accessibility on-the-go.
- Design mobile-friendly layouts and prioritize key metrics and insights for mobile users.

12. Performance Monitoring:

- Monitor the performance of your online delivery app services in real-time using Power BI.
- Set up alerts or notifications for key metrics to quickly respond to any issues or anomalies.
- By following these steps, you can create a comprehensive Power BI report for analyzing services in online delivery apps and gaining valuable insights to optimize performance and enhance customer satisfaction.

2.2 TOOLS AND SOFTWARE:

Visualization Tools:

Power BI offers a wide range of visualization options, including bar charts, line charts, pie charts, maps, tables, and more. You can use these visualizations to present your data in an intuitive and visually appealing manner.

DAX (Data Analysis Expressions):

DAX is a formula language used in Power BI for creating calculated columns, measures, and calculated tables. Understanding DAX is essential for performing advanced calculations and analysis within your Power BI report.

Power BI Service:

Once you've created your Power BI report in Power BI Desktop, you can publish it to the Power BI service. The Power BI service allows you to share your reports and dashboards with others, collaborate on reports in real-time, and access your reports from any device with an internet connection.

Mobile App:

Power BI offers mobile apps for iOS, Android, and Windows devices, allowing you to view and interact with your Power BI reports on the go.

Power BI Premium:

Depending on your organization's needs, you may choose to deploy your Power BI reports using Power BI Premium. Power BI Premium offers additional features and capabilities, including larger data capacities,

dedicated resources, and enhanced security and compliance features.

CHAPTER 3

PROJECT ARCHITECTURE

3.1 ARCHITECTURE:

1. Data Sources:

- Identify and connect to relevant data sources such as databases, APIs, or flat files that contain data related to your online delivery app. This may include:
  - Orders data: Information about orders placed by customers, including order ID, customer ID, order date, delivery address, items ordered, etc.
  - Customers data: Details about customers, including customer ID, name, contact information, etc.
  - Products/Services data: Information about the products or services offered by your app, including product ID, name, description, price, category, etc.
  - Ratings/Reviews data: Customer feedback and ratings for orders or services.

- Other relevant data sources depending on the specific requirements of your analysis.

2. **Data Modeling:**
    - Use Power Query Editor to clean, transform, and shape your data as needed. This may involve tasks such as:
        - Removing duplicates and irrelevant columns.
        - Handling missing or incorrect data.
        - Merging or appending tables to create a unified data model.
    - Define relationships between tables based on common fields (e.g., customer ID, product ID) using the Manage Relationships feature in Power BI Desktop.
3. **Calculation Logic:**
    - Create calculated columns and measures using DAX (Data Analysis Expressions) to derive insights and perform calculations. Examples of calculations may include:
        - Total sales revenue: Sum of the price of items ordered.
        - Average order value: Total sales revenue divided by the number of orders.

- Customer lifetime value: Predictive calculations based on historical data.
- Service rating average: Average rating of services based on customer feedback.
- Time intelligence calculations for analyzing trends over time (e.g., year-to-date sales, rolling averages).

4. **Visualization Design:**
   - Design interactive and intuitive visualizations to present insights from your data. Consider the following types of visualizations:
     - Bar charts, line charts, and area charts for trend analysis and comparison.
     - Pie charts or donut charts to show the distribution of categorical data (e.g., service types, customer segments).
     - Maps to visualize geographical data (e.g., delivery locations, service coverage areas).
     - Tables and matrices for displaying detailed information and aggregations.
   - Use slicers, filters, and drill-down functionality to enable users to explore the data and gain deeper insights.

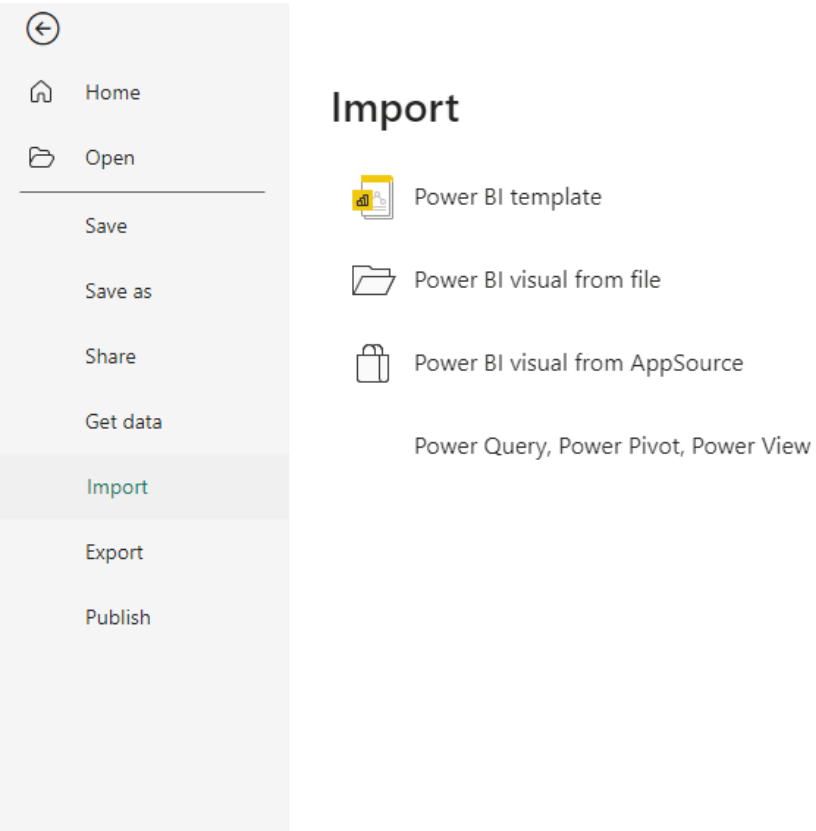
5. **Dashboard Creation:**
    - Combine multiple visualizations into interactive dashboards to provide a comprehensive view of key metrics and insights.
    - Organize dashboards into logical sections based on the aspects of the online delivery app you want to analyze (e.g., sales performance, customer behavior, service ratings).
    - Ensure that dashboards are visually appealing, easy to navigate, and responsive to user interactions.
6. **Deployment and Sharing:**
    - Publish your Power BI reports and dashboards to the Power BI service to share them with stakeholders within your organization.
    - Configure data refresh schedules to keep your reports up-to-date with the latest data from your data sources.
    - Share dashboards with specific users or groups and set up row-level security if needed to control access to sensitive data.

CHAPTER 4

MODELING AND RESULT

MANAGE RELATIONSHIP:

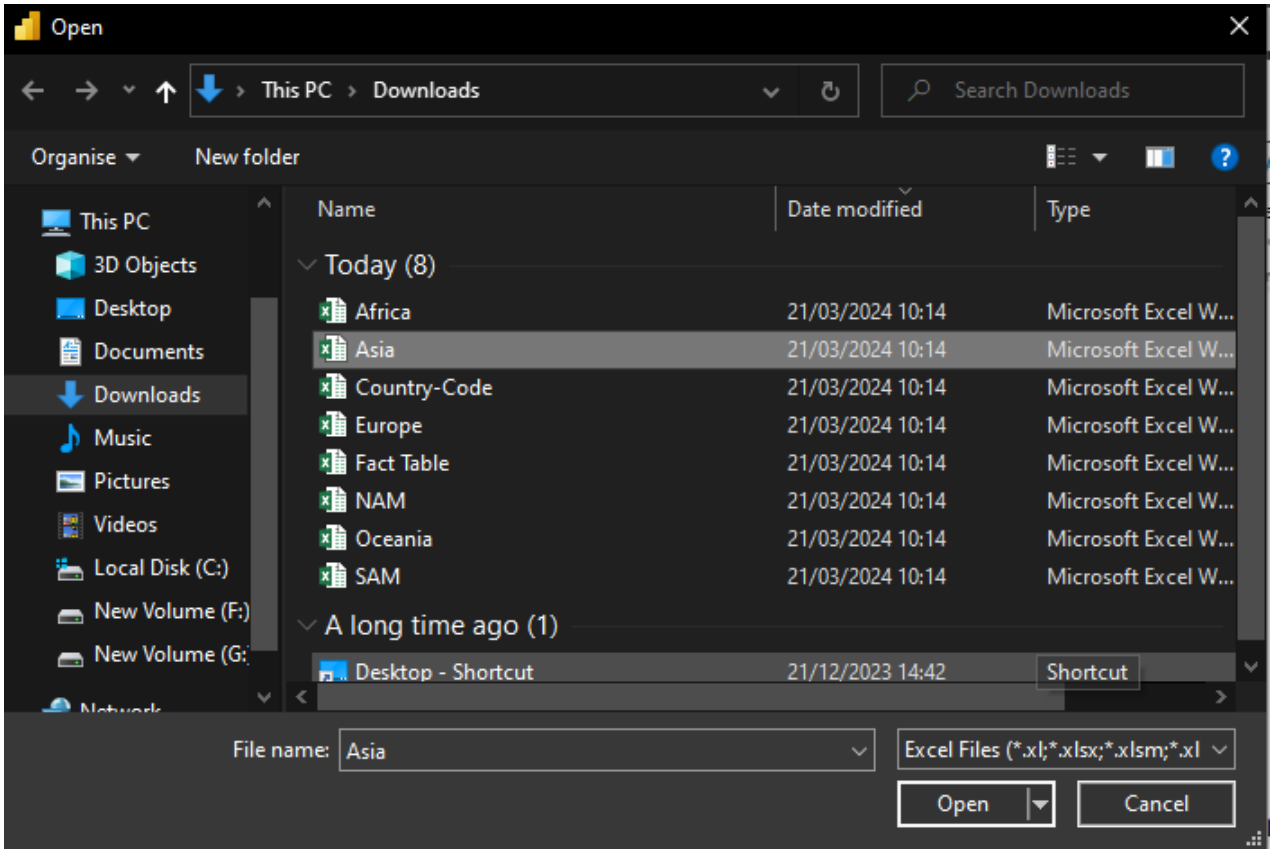
4.1 IMPORT:



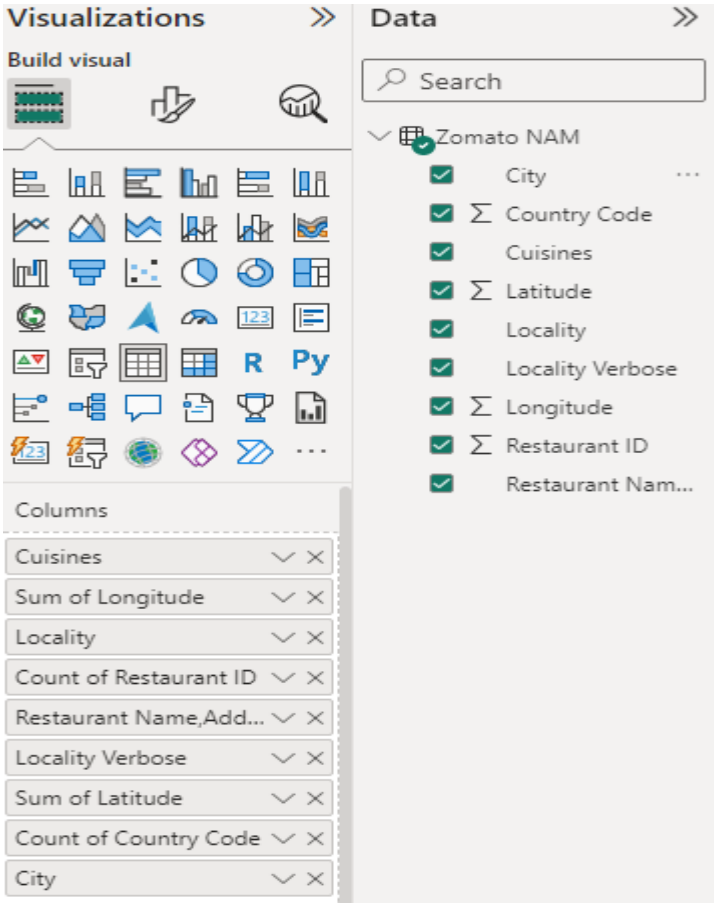
Common data sources include:

- Excel: Import data from an Excel workbook (.xlsx or .xls).

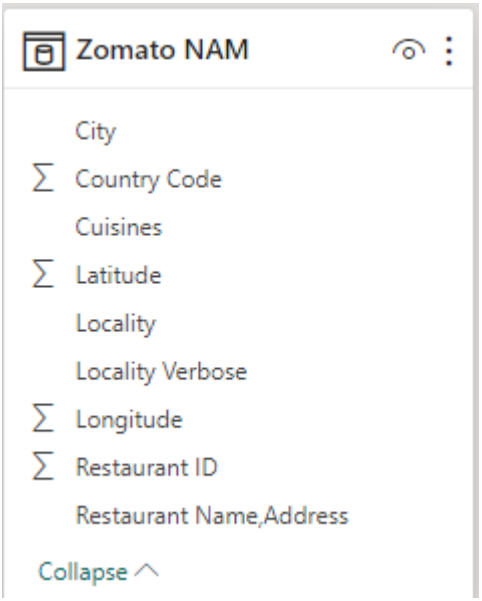
    - SQL Server: Connect to data stored in a SQL Server database.
    - CSV: Import data from a comma-separated values (CSV) file.
    - Web: Connect to data from a web page or web API.
    - Azure: Connect to data stored in Azure services such as Azure SQL Database, Azure Blob Storage, etc.
    - Dynamics 365: Import data from Microsoft Dynamics 365 applications.
- Choose the specific data source connector and click "Connect."

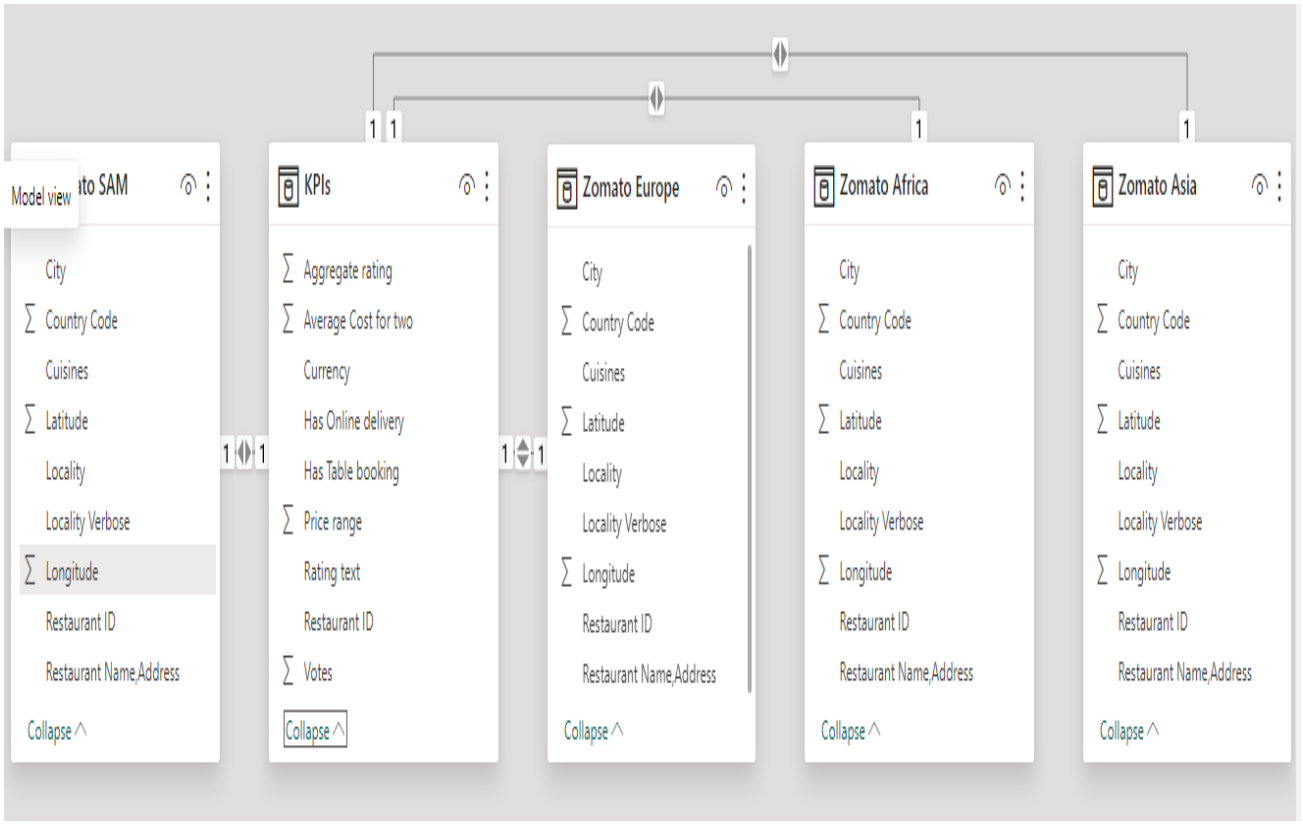


4.2 VISUALIZATION:


Visualizations
Build visual
Columns
Cuisines
Sum of Longitude
Locality
Count of Restaurant ID
Restaurant Name,Add...
Locality Verbose
Sum of Latitude
Count of Country Code
City
Data
Search
Zomato NAM
City
Country Code
Cuisines
Latitude
Locality
Locality Verbose
Longitude
Restaurant ID
Restaurant Nam...

4.3 MAPPING:

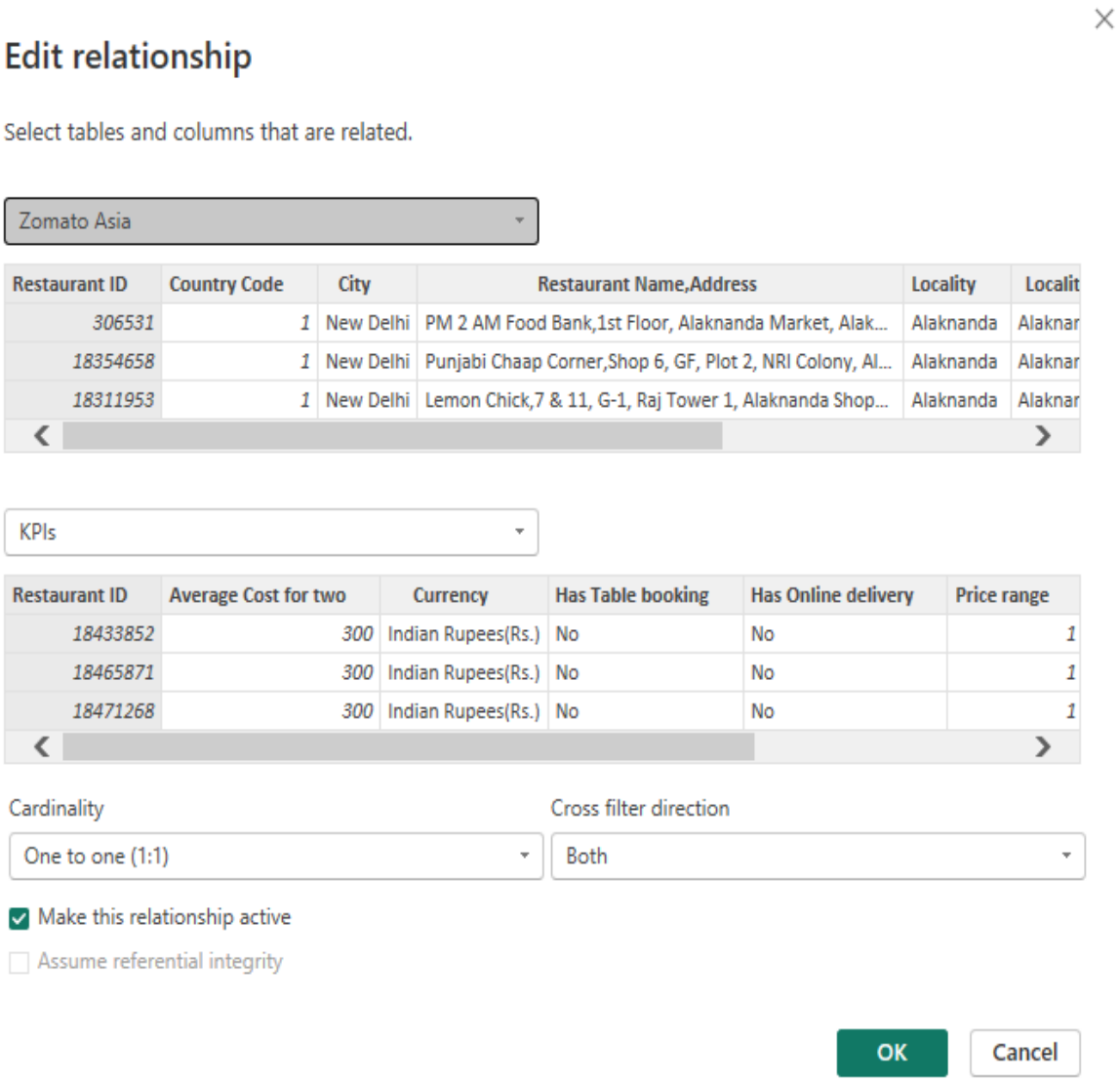

Zomato NAM
City
Country Code
Cuisines
Latitude
Locality
Locality Verbose
Longitude
Restaurant ID
Restaurant Name,Address
Collapse



4.4 MANAGE RELATION:

Managing relationships in Power BI is crucial for creating a coherent and functional data model that accurately represents the relationships between different tables in your dataset. Here's how you can manage relationships in Power BI.

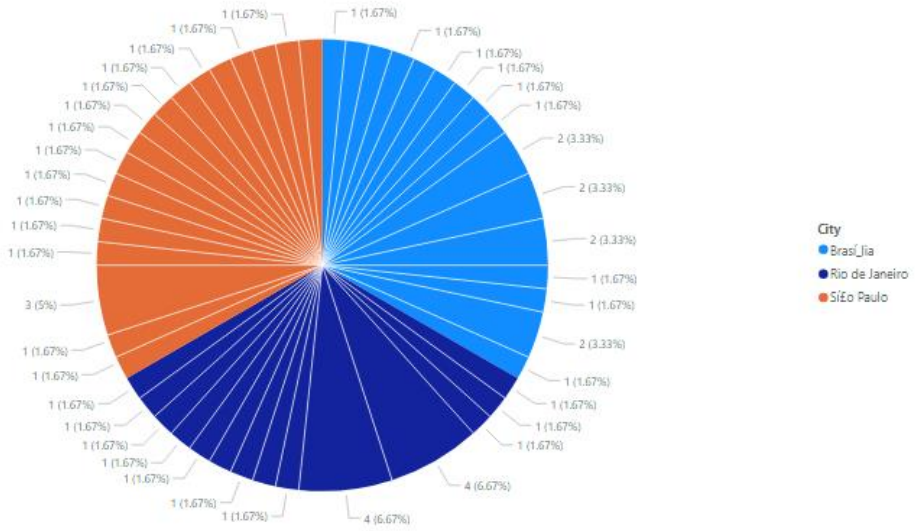
By effectively managing relationships in Power BI, you can create a robust and accurate data model that supports complex analysis and reporting requirements for your online delivery app or any other type of dataset.



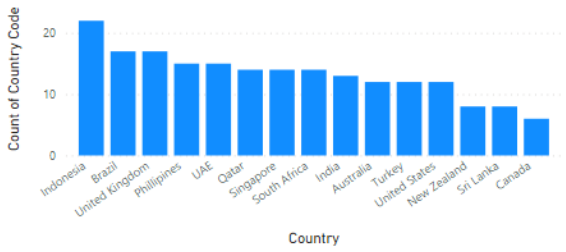
4.5 CHART

- Customize the appearance and behavior of the chart by adjusting various properties such as colors, labels, axis scales, and data aggregation functions.
- You can format the chart by clicking on the "Format" options in the Visualizations pane

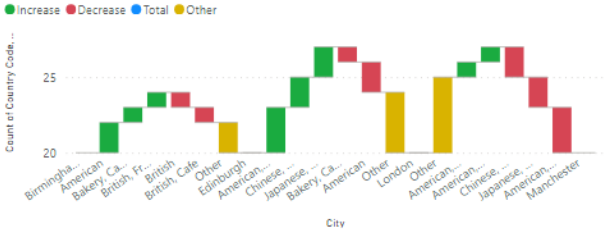
Count of Country Code, Sum of Latitude, Sum of Longitude and Count of Restaurant ID by City and Cuisines

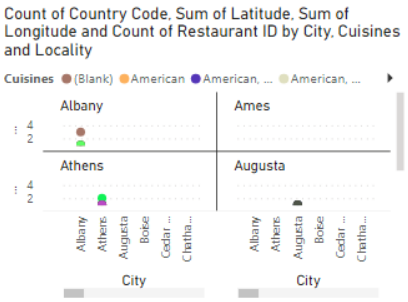


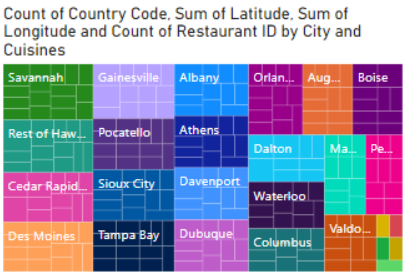
Count of Country Code by Country

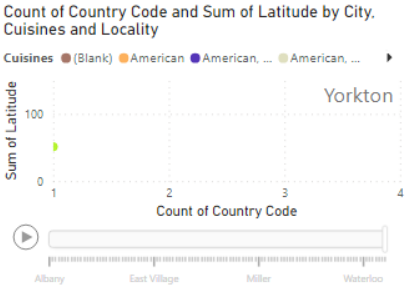


Count of Country Code, Sum of Latitude, Sum of Longitude and Count of Restaurant ID by City and Cuisines

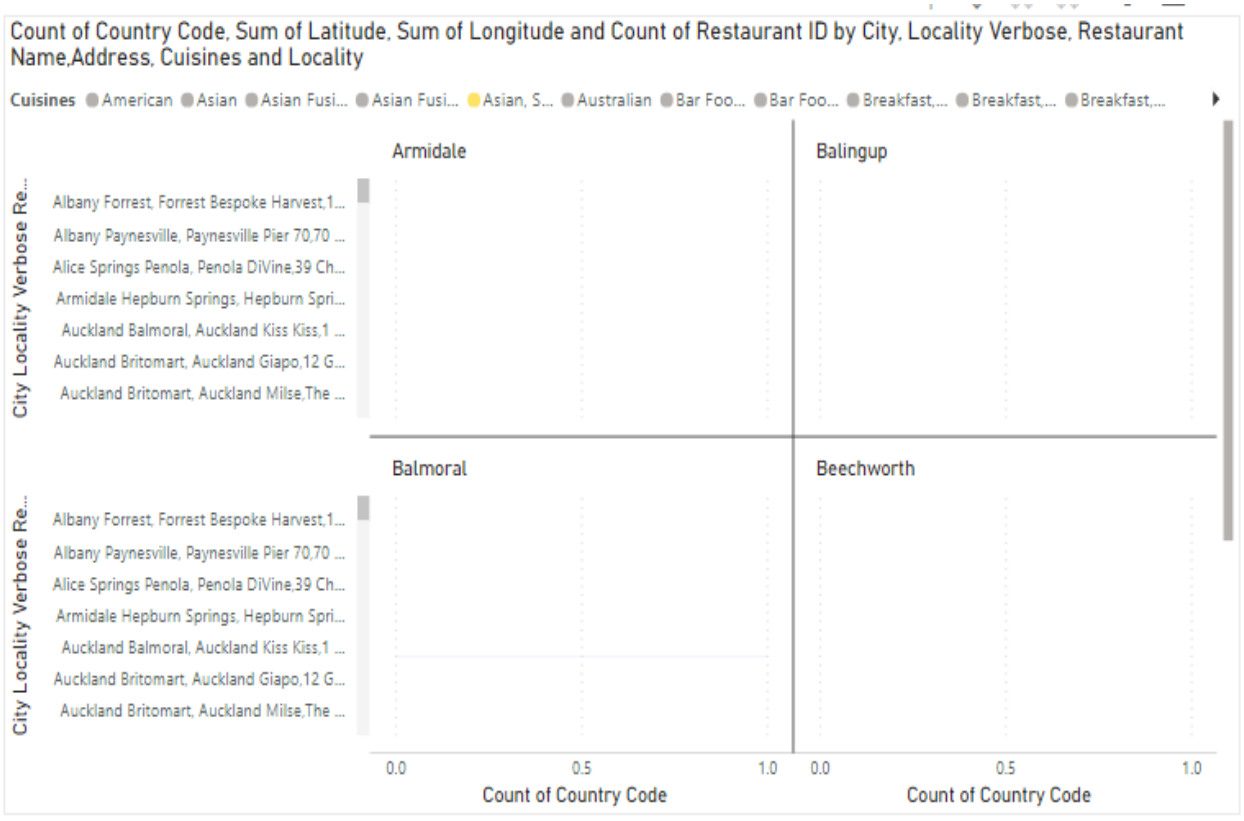




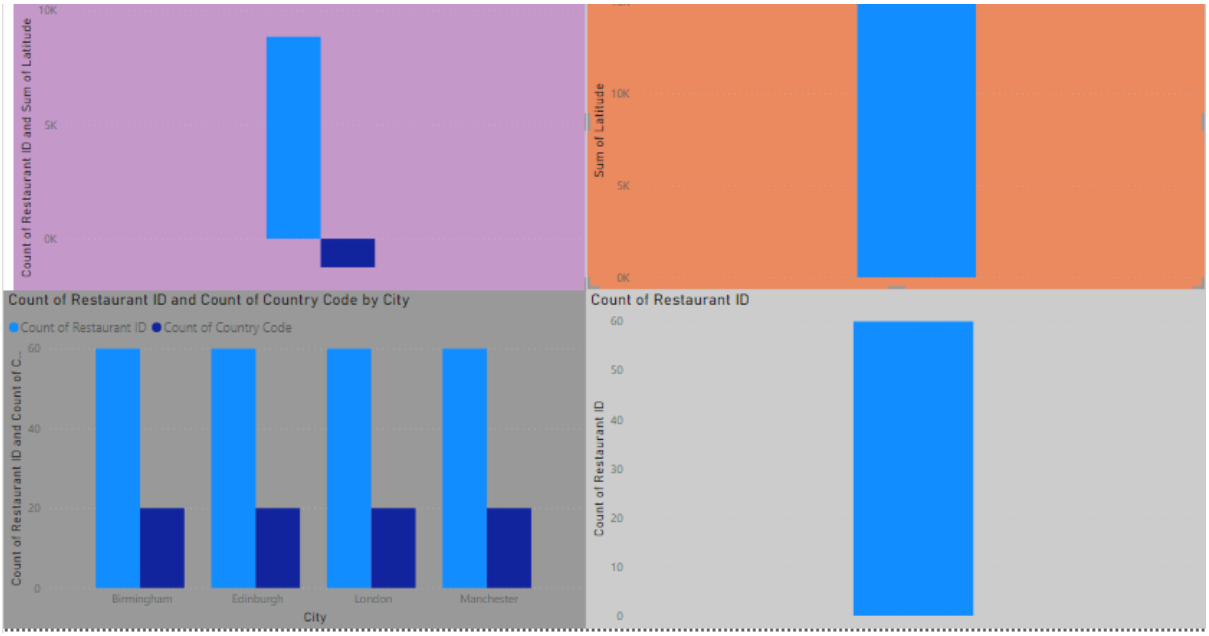




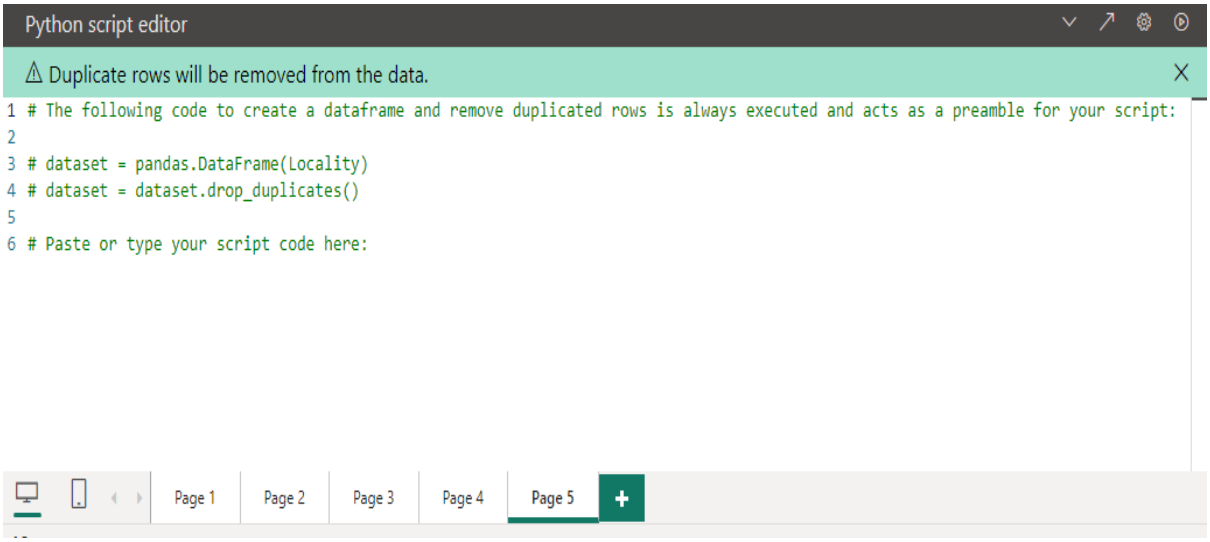
4.6 COLUMN CHART:



Formula:

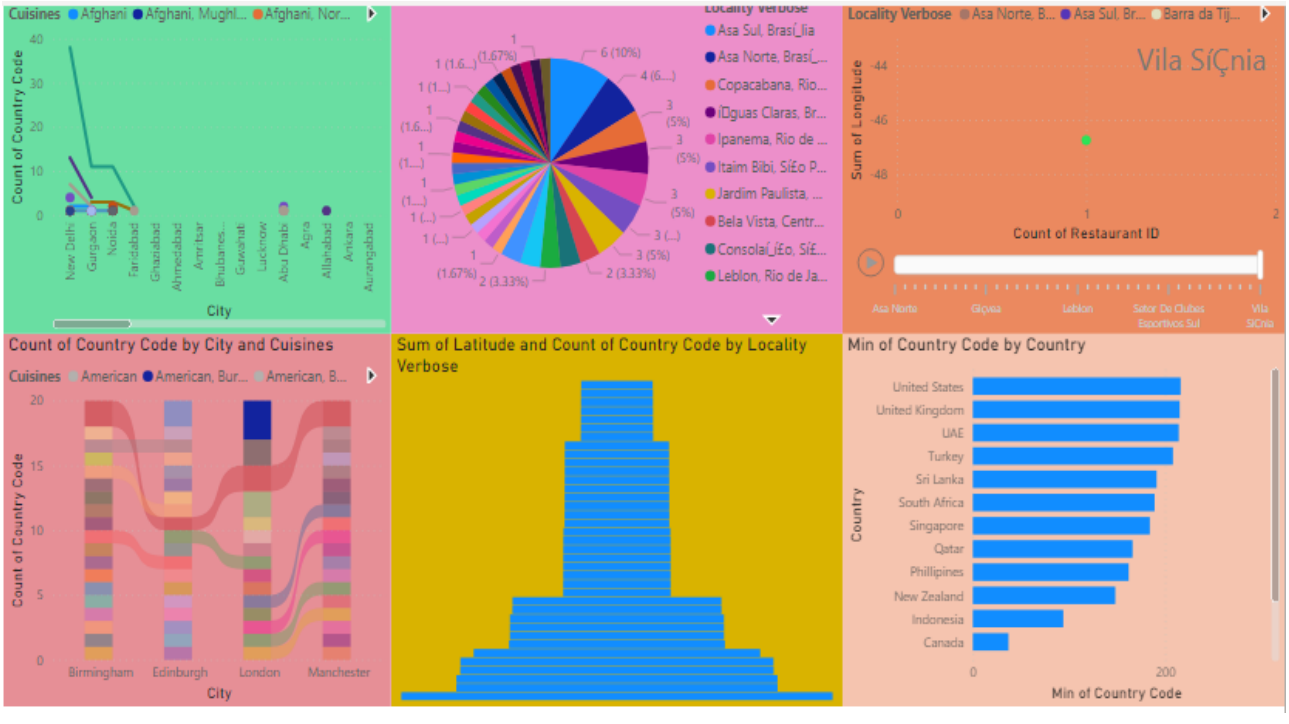


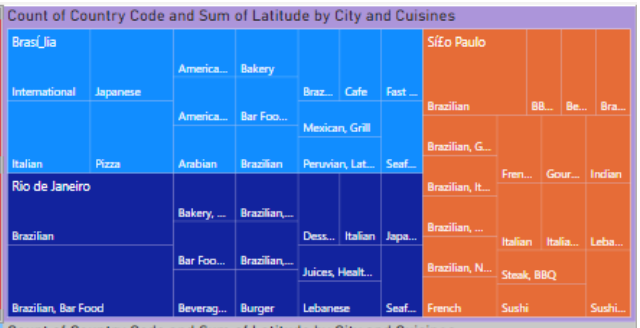
Python Editior:

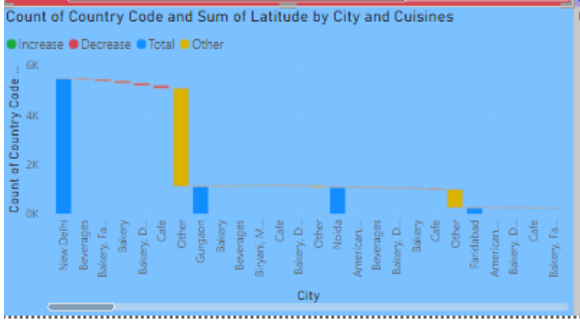


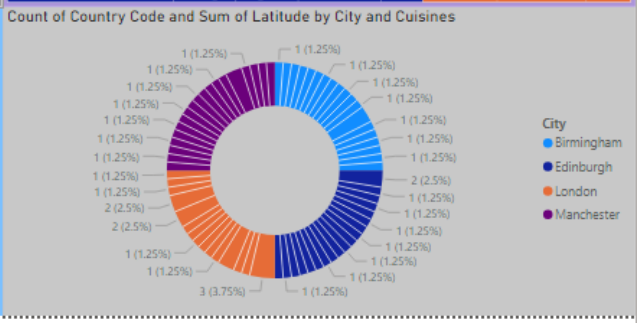
Dashboard:


Min of Country Code
Country
United States
United Kingdom
UAE
Turkey
Sri Lanka
South Africa
Singapore
Qatar
Phillipines
New Zealand
Indonesia
Canada
Brazil
Australia
India
Latitude
-23.62
-23.61
-23.60
-23.59
-23.59
-23.59
-23.58
-23.58
-23.58
Count of Country Code and Sum of Latitude by City, Cuisines and Locality
Cuisines
American, ...
American, ...
Arabian
Bakery
Bakery, S...
Bar Food, ...
Asa Norte
Asa Sul
Barra da Tijuca
Bela Vista, Centro
Brasília
Rio de Janeiro
São Paulo
City
Count of Country Code, Sum of Latitude, First City and First Cuisines
60
-1246.80756422
120


Cuisines
Afghani
Afghani, Mughl...
Afghani, Nor...
Count of Country Code
City
Locality Verbose
Asa Sul, Brasí_lia
Asa Norte, Brasí_...
Copacabana, Rio...
IDguas Claras, Br...
Ipanema, Rio de ...
Itaim Bibi, SÍ£o P...
Jardim Paulista, ...
Bela Vista, Centr...
Consolaí¡£o, SÍ£...
Leblon, Rio de Ja...
Locality Verbose
Asa Norte, B...
Asa Sul, Br...
Barra da Tij...
Vila SÍÇnia
Sum of Longitude
Count of Restaurant ID
Count of Country Code by City and Cuisines
Cuisines
American
American, Bur...
American, B...
Birmingham
Edinburgh
London
Manchester
Sum of Latitude and Count of Country Code by Locality Verbose
Min of Country Code by Country
United States
United Kingdom
UAE
Turkey
Sri Lanka
South Africa
Singapore
Qatar
Phillipines
New Zealand
Indonesia
Canada
Min of Country Code

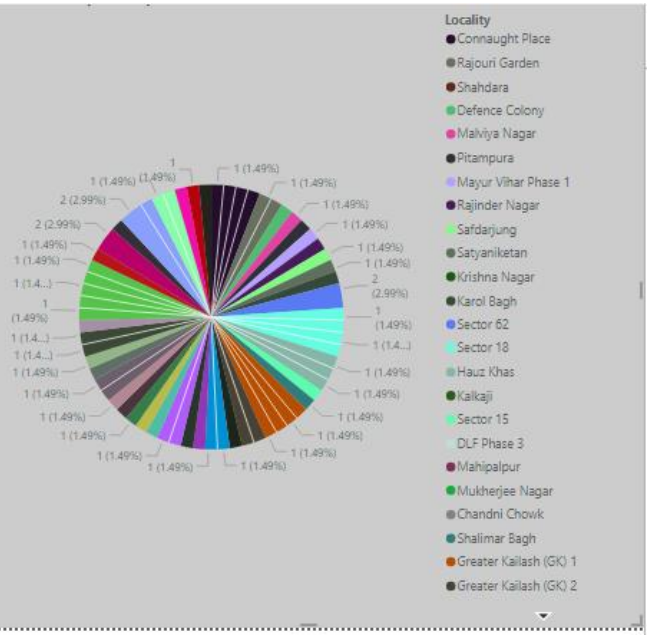






12th Square Building, Banjara Hills	78.44
A Hotel, Gurdev Nagar	75.84
Aaya Nagar	0.00
Abu Dhabi Mall, Tourist Club Area (Al Zahiyah)	108.77
Abu Shagara	166.18
Acropolis Mall, Kasba	176.79
Adajan Gam	218.38
Adchini	1,003.57
Addition Hills	121.03
Aditya Mega Mall, Karkardooma	309.21
Adyar	80.25
Aerocity	308.38
Aggar Nagar	0.00
Aggarwal City Mall, Pitampura	231.40

Albemarle Street, Ma...	Albemarle Street, Ma...	51.51
Locality	Locality Verbose	Sum of Latitude
Alum Rock	Alum Rock, Birmingh...	52.49
Locality	Locality Verbose	Sum of Latitude
Archer Street, Soho	Archer Street, Soho, ...	51.51
Locality	Locality Verbose	Sum of Latitude
Beak Street, Soho	Beak Street, Soho, Lo...	51.51
Locality	Locality Verbose	Sum of Latitude
Bishopsgate, City Of ...	Bishopsgate, City Of ...	51.52
Locality	Locality Verbose	Sum of Latitude
Boundary Street, Sho...	Boundary Street, Sho...	51.52
Locality	Locality Verbose	Sum of Latitude



Conclusion:

By leveraging the capabilities of Power BI, this project aims to develop an advanced online delivery application that empowers businesses to make data-driven decisions, enhance operational efficiency, and deliver superior customer experiences. Through effective data visualization and analytics, the application will provide valuable insights that drive business growth and competitiveness in the rapidly evolving online delivery industry.

FUTURE SCOPE

The future scope of online delivery services in Power BI lies in leveraging data analytics and visualization capabilities to drive strategic decision-making, optimize operations, and enhance customer experiences. Here's how Power BI can contribute to the future of online delivery services:

1. **Data-Driven Insights:**
    - Utilize Power BI to analyze vast amounts of data generated by online delivery platforms, including customer orders, delivery routes, inventory levels, and customer feedback.
    - Extract actionable insights from data to identify trends, patterns, and opportunities for improvement in delivery operations, product offerings, and customer engagement.
2. **Operational Efficiency:**
    - Implement Power BI dashboards to monitor key performance indicators (KPIs) such as delivery times, order accuracy, driver productivity, and inventory turnover.
    - Use data visualization to identify bottlenecks, inefficiencies, and areas for optimization in the delivery process, such as route optimization, demand forecasting, and inventory management.
3. **Predictive Analytics:**
    - Apply predictive analytics models in Power BI to forecast demand, anticipate customer preferences, and optimize resource allocation for online delivery services.

- Use machine learning algorithms to predict delivery times, estimate order volumes, and optimize delivery routes based on historical data and real-time variables.

4. **Customer Segmentation and Personalization:**
    - Leverage Power BI to segment customers based on their ordering behavior, preferences, demographics, and purchase history.
    - Customize marketing campaigns, promotions, and delivery options for different customer segments to enhance personalization and drive customer loyalty.
5. **Real-Time Monitoring and Alerts:**
    - Develop Power BI reports and dashboards for real-time monitoring of delivery operations, including vehicle tracking, order status updates, and delivery performance.
    - Set up alerts and notifications in Power BI to trigger proactive responses to delivery delays, inventory shortages, or other operational issues.

Links: