CASE STUDY REPORT

DATA ANALYTICS WITH POWER BI

"360-DEGREE BUSINESS ANALYSIS OF ONLINE DELIVERY APPS USING POWER BI"

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ABSTRACT

The proliferation of online delivery apps has revolutionized the way consumers interact with businesses, significantly impacting various industries worldwide. This study presents a comprehensive 360-degree analysis of online delivery apps, leveraging the powerful analytical capabilities of Power BI (Business Intelligence). Through the integration of diverse data sources and advanced visualization techniques, this analysis offers insights into key aspects of online delivery apps, including user behaviour, market trends, operational efficiency, and customer satisfaction.

The methodology employed involves gathering data from multiple channels, such as transaction records, user feedback, market demographics, and competitor analysis. These datasets are then processed, cleaned, and integrated within the Power BI platform to generate meaningful insights. Utilizing a combination of interactive dashboards, reports, and data visualizations, this analysis provides stakeholders with a holistic view of the online delivery app ecosystem.

Key findings include patterns in consumer preferences, peak usage hours, popular cuisines, geographic demand hotspots, delivery time efficiency, and customer feedback sentiment analysis. Additionally, the analysis explores the effectiveness of promotional campaigns, pricing strategies, and

the impact of external factors such as seasonal fluctuations and socio-economic trends.

The implications of this research extend to various stakeholders within the online delivery app industry, including app developers, restaurant partners, delivery drivers, and end-users. By leveraging the insights derived from this 360-degree analysis, businesses can optimize their operations, enhance user experience, and gain a competitive edge in the dynamic landscape of online delivery services.

In conclusion, this study demonstrates the efficacy of Power BI as a comprehensive analytical tool for dissecting and understanding the intricacies of online delivery apps. By leveraging data-driven insights, businesses can make informed decisions, adapt to evolving consumer preferences, and drive sustainable growth in the digital marketplace.

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CHAPTER 1

INTRODUCTION

1.1 Problem Statement:

In today's fast-paced digital age, online delivery apps have become synonymous with convenience, offering consumers unprecedented access to goods and services at the tap of a screen. However, behind the seamless user experience lie complex challenges and opportunities for businesses striving to meet evolving consumer demands while maintaining operational efficiency. In this context, harnessing the power of data analytics becomes imperative for effective problem-solving and optimization within the online delivery app ecosystem.

This introduction sets the stage for a comprehensive 360-degree analysis of online delivery apps using Power BI (Business Intelligence) as a problem-solving tool. By leveraging the rich data generated by these platforms, this analysis aims to provide actionable insights into key areas such as user engagement, market dynamics, operational performance, and customer satisfaction.

1.2 Background:

The landscape of online delivery apps is characterized by intense competition, shifting consumer

preferences, and technological innovation. While these platforms offer unparalleled convenience and choice to users, businesses face a myriad of challenges in delivering seamless experiences while navigating complexities such as supply chain logistics, pricing strategies, and quality control.

At the heart of these challenges lies the need for data-driven decision-making. By harnessing the vast amounts of data generated by online delivery apps, businesses can gain invaluable insights into customer behaviour, market trends, and operational inefficiencies. However, the sheer volume and complexity of this data present a daunting task for traditional analytical methods.

This is where Power BI emerges as a game-changer. With its intuitive interface, robust analytical capabilities, and seamless integration with diverse data sources, Power BI empowers businesses to unlock the full potential of their data and derive actionable insights. Whether it's analysing customer order patterns, optimizing delivery routes, or identifying opportunities for targeted marketing campaigns, Power BI provides the tools needed to solve complex problems and drive strategic decision-making.

1.3 Key Features:

At the 2021 Microsoft Business Application Summit, Microsoft revealed that Power BI is now used by 97% of Fortune 500 companies. With so many users now on the Power BI platform, a question that often gets brought up is, “What are the top Power BI features I need to know about?”.

Since there are too many to fit into one article, we’ve narrowed them down to create our Top 10 Power BI features list shown below. Some features are only available in the paid versions of Power BI (Pro or Premium), so we’ve marked the availability by Power BI tiers.

1. Monthly Product Updates (all)
2. Extract insights from large datasets (varies)
3. Create custom visualizations with R and Python (all)
4. Analyze your datasets in Excel (Pro or Premium only)
5. Create beautiful maps with your data (all)
6. Easily source and transform data with Power Query (all)
7. Automatic data refreshes (Pro or Premium only)
8. Power BI Mobile App (all)

9. Re-use datasets across different reports and dashboards (Pro or Premium only)
10. Powerful integration with other Microsoft Products (varies)

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

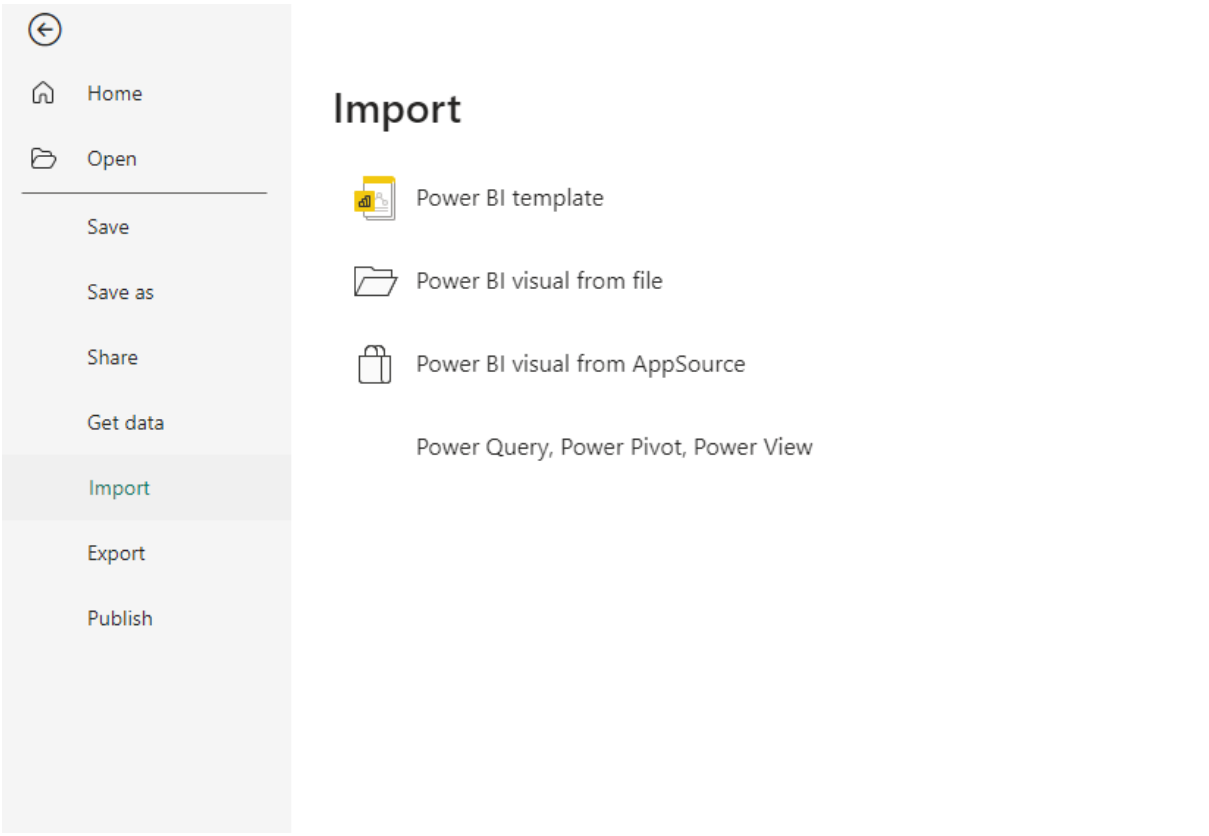
MANAGE RELATIONSHIP:

4.1 IMPORT:

Importing an Excel sheet into Power BI to use as a dataset is a straightforward process. Here's a step-by-step guide to help you do it:

1. **Launch Power BI Desktop**: Open Power BI Desktop application on your computer.
2. **Get Data**: Click on the "Home" tab in the Power BI Desktop application, then click on "Get Data" from the ribbon.
3. **Select Excel**: In the "Get Data" window, choose "Excel" from the list of available data sources.
4. **Navigate to Your Excel File**: Browse to the location where your Excel file is saved and select it. Click "Open".
5. **Select the Sheet**: If your Excel file has multiple sheets, Power BI will prompt you to select the specific sheet you want to import. Choose the sheet containing your dataset and click "Load" or "Transform Data" to proceed with data transformation if needed.

6. **Data Transformation (Optional)**: Power BI provides tools to transform your data if needed. You can clean, reshape, and combine data from multiple sources using the Power Query Editor. Click "Transform Data" to open the Power Query Editor and perform transformations as required.
7. **Load Data**: After transforming the data (if necessary), click on "Close & Load" to import the data into Power BI. Alternatively, you can choose to load the data to the data model for further manipulation before visualization.
8. **Review Data**: Once the data is loaded, you can review it in the "Fields" pane on the right-hand side of the Power BI Desktop window. This pane displays the tables and fields imported from your Excel file.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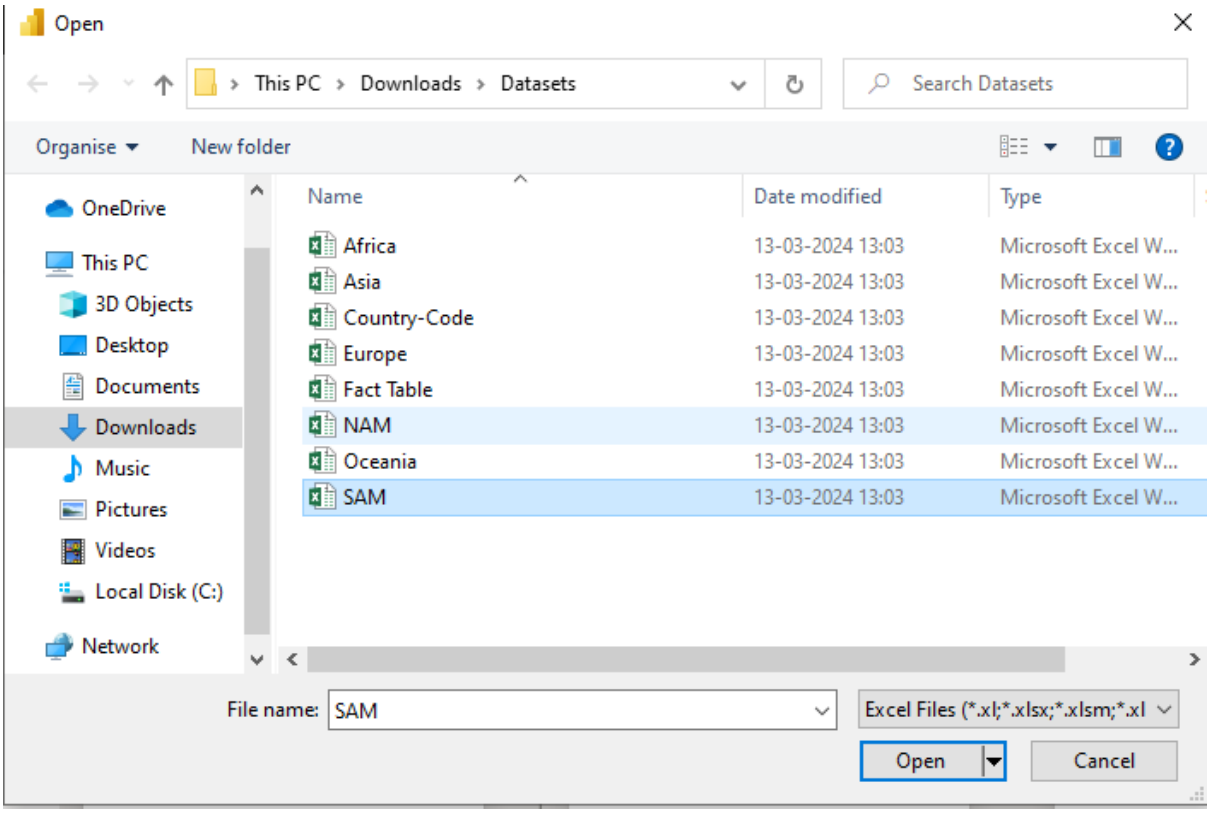
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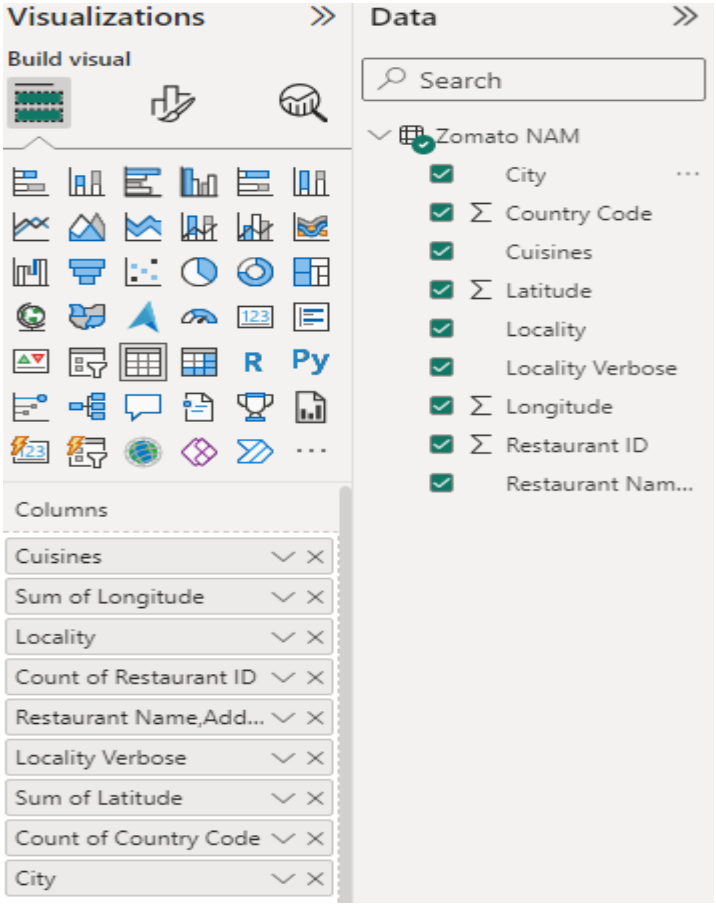
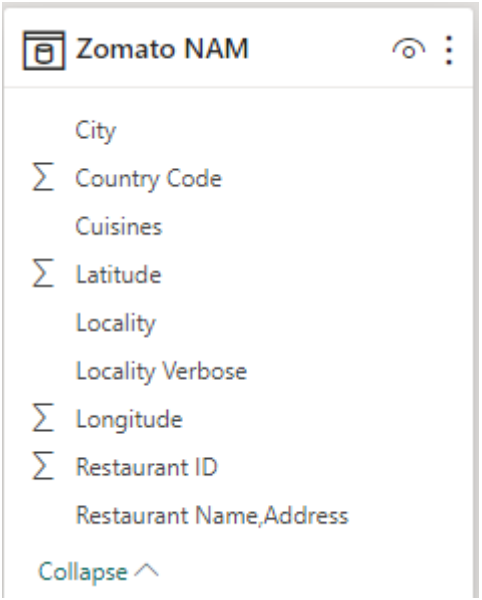
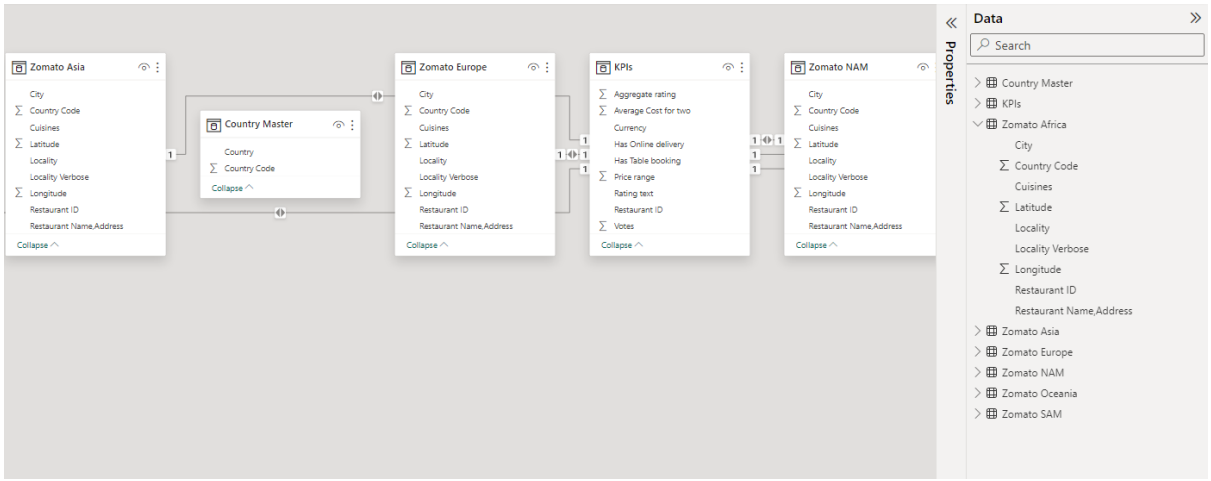
4.2 VISUALIZATION:



4.3 MAPPING:

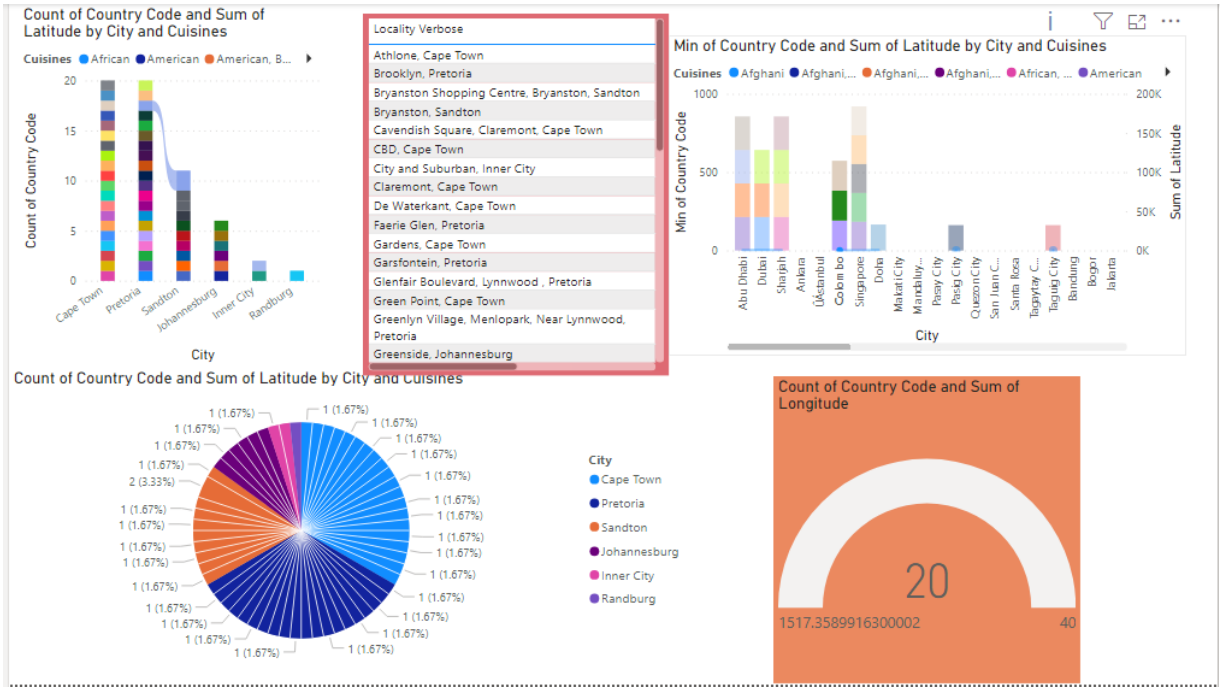




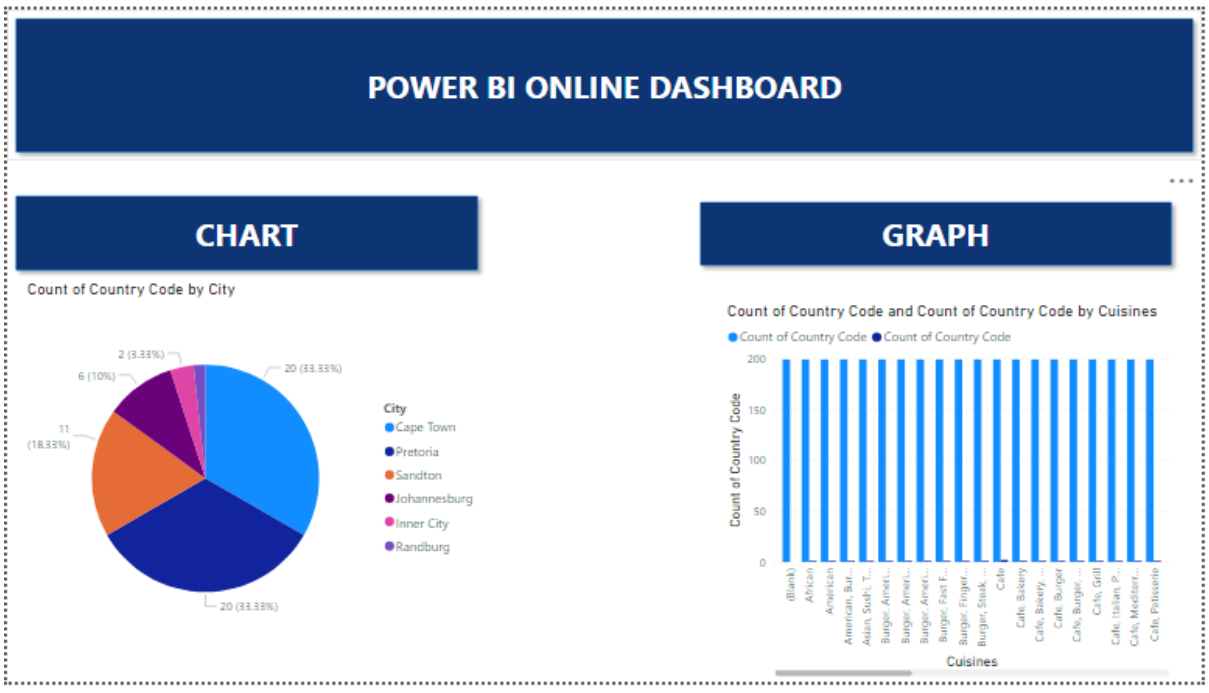
4.4 MANAGE RELATION:

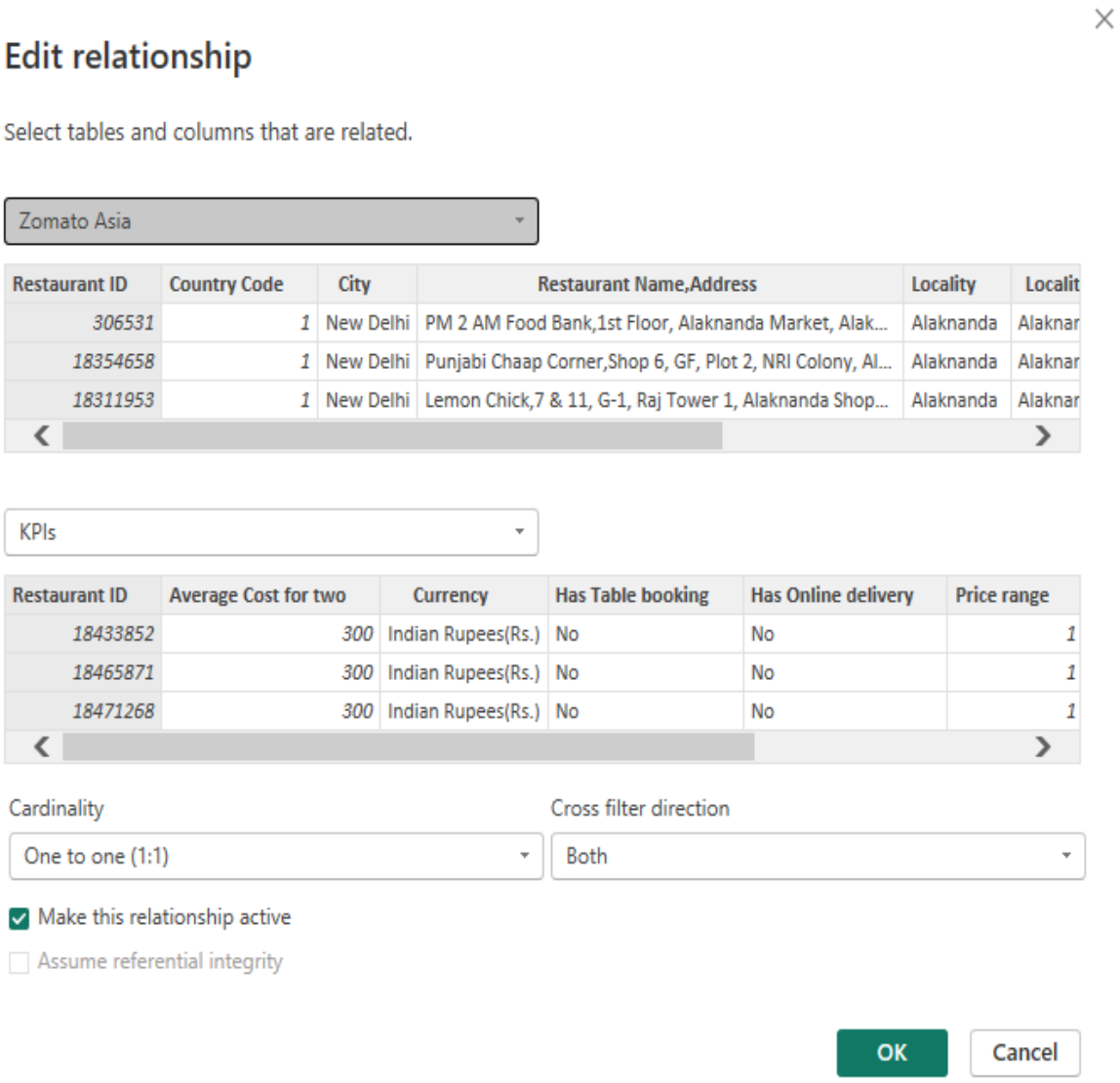
Managing relationships in Power BI is crucial for creating a coherent and functional data model that accurately represents the relationships between different tables in your dataset. Here's how you can manage relationships in Power BI.

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 Dashboard

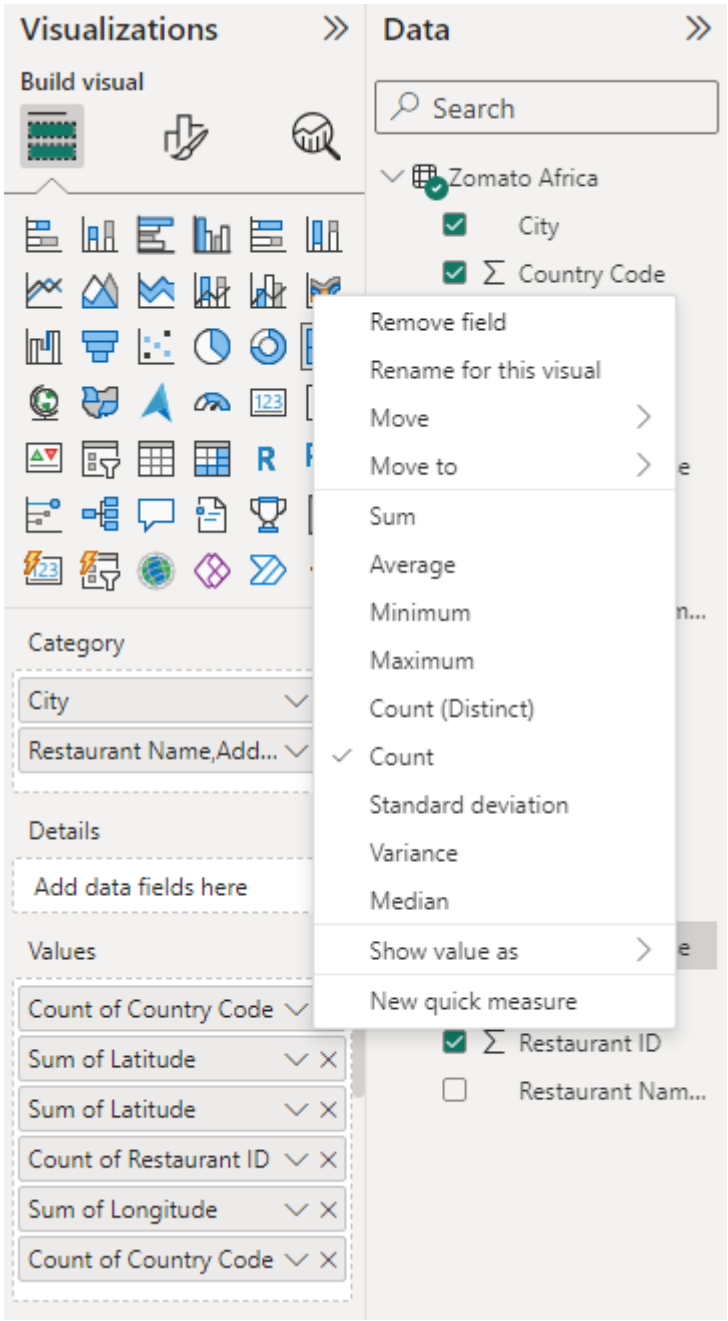




4.6 AVERAGE THE RELATION

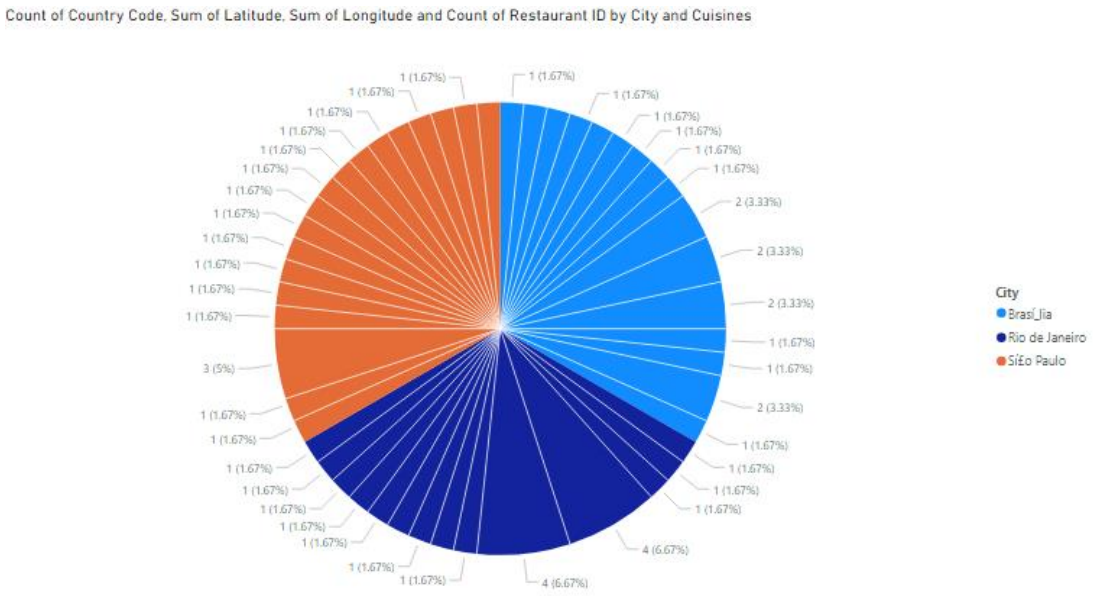
1. Select the column to be averaged and drag it into the “Values” field well.
2. Click on the “Measure Tools” tab and select “New Measure”.
3. Enter a name for the measure and use the AVERAGEX function to define the calculation.
4. Specify the table over which you want to average and the expression to be calculated for each row.

5. Click “OK” to create the measure and use it in your visualizations.

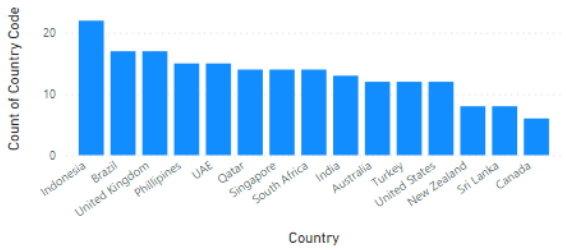


4.7 CHART

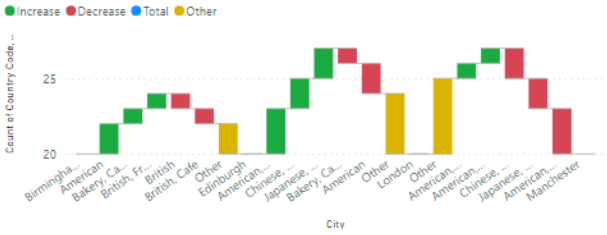
- Customize the appearance and behavior of the chart by adjusting various properties such as colors, labels, axis scales, and data aggregation functions.
- You can format the chart by clicking on the "Format" options in the Visualizations pane



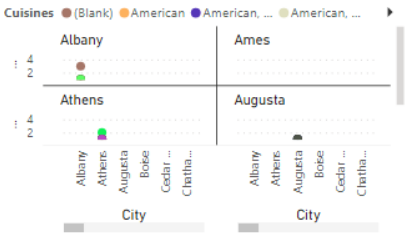
Count of Country Code by Country



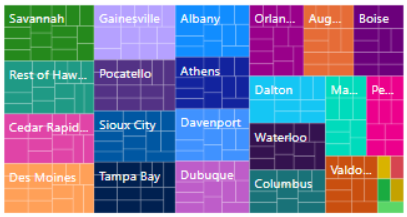
Count of Country Code, Sum of Latitude, Sum of Longitude and Count of Restaurant ID by City and Cuisines



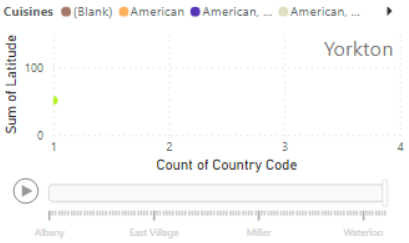
Count of Country Code, Sum of Latitude, Sum of Longitude and Count of Restaurant ID by City, Cuisines and Locality



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



Count of Country Code and Sum of Latitude by City, Cuisines and Locality



4.8 COLUMN CHART:

Conclusion:

In conclusion, the 360-degree business analysis of online delivery apps using Power BI has provided comprehensive insights into various aspects of the online delivery ecosystem. Through the integration of diverse data sources and advanced analytical techniques, this project has illuminated key facets of user behavior, market trends, operational efficiency, and customer satisfaction within the online delivery industry.

By leveraging the powerful capabilities of Power BI, stakeholders have gained a holistic understanding of the complexities inherent in online delivery apps. From identifying peak usage hours and popular cuisines to optimizing delivery routes and analyzing customer feedback sentiment, this analysis has unearthed valuable insights that can drive strategic decision-making and operational excellence.

One of the primary strengths of this project lies in its ability to provide actionable insights across multiple dimensions of the online delivery business. Whether it's understanding consumer preferences, optimizing promotional campaigns, or enhancing operational efficiency, the data-driven approach facilitated by Power BI has enabled stakeholders to unlock new opportunities and address challenges proactively.

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.

REFERENCES

- https://learn.microsoft.com/en-us/dax/average-function-dax
- https://www.geeksforgeeks.org/power-bi-tutorial/
- https://www.simplilearn.com/tutorials/power-bi-tutorial
- https://chat.openai.com/