



Tech Saksham

Case Study Report

Data Analytics with Power BI

“360-degree Business Analysis of Online Delivery Apps Using Power BI”

“Sri Paramakalyani College, Alwarkurichi”

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ABSTRACT

This report presents a comprehensive 360-degree business analysis of Zomato, a prominent player in the online food delivery industry, utilizing Power BI as the primary analytical tool. Zomato's performance and market position are examined through various lenses, including key metrics, geographical analysis, customer segmentation, restaurant performance, trend analysis, and competitor benchmarking.

The analysis draws insights from diverse datasets, encompassing transactional data, customer reviews, and restaurant information. Through interactive Power BI dashboards, stakeholders gain visibility into crucial metrics such as total orders, revenue trends, customer retention rates, and market share dynamics. Geographical analysis unveils Zomato's market penetration across different regions, while customer segmentation sheds light on diverse customer preferences and behaviors.

Furthermore, restaurant performance analysis identifies top-performing establishments and areas for enhancement, while trend analysis unveils emerging patterns in food preferences and ordering habits. Comparative analysis against key competitors provides valuable insights into Zomato's competitive position and opportunities for differentiation.



Based on the findings, actionable recommendations are provided to optimize operations, enhance customer satisfaction, and foster sustained growth. By leveraging Power BI's capabilities, this report equips stakeholders with actionable insights to inform strategic decision-making and drive Zomato's success in the dynamic online food delivery landscape.

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CHAPTER 1

INTRODUCTION

Problem Statement:

Zomato, as a leading player in the online food delivery industry, faces several challenges and opportunities that necessitate a comprehensive analysis. These challenges stem from various aspects of its business operations, market dynamics, and customer interactions:

Market Saturation and Competition: The online food delivery market is highly competitive, with several players vying for market share. Zomato must navigate this competitive landscape effectively to maintain its position and continue growing.

Operational Efficiency: Efficient management of operations, including delivery logistics, restaurant partnerships, and order fulfillment, is crucial for meeting customer expectations and maintaining profitability.

Customer Satisfaction: Ensuring high levels of customer satisfaction is paramount for retaining existing customers and attracting new ones. Understanding and addressing customer pain points and preferences are essential for enhancing the overall user experience.

Market Dynamics and Trends: The industry is constantly evolving, with changing consumer preferences, technological advancements, and market trends. Zomato needs to stay agile and adapt to these changes to remain relevant and competitive.

Regulatory Environment: Compliance with regulations and policies governing the food delivery industry is essential for Zomato's operations. Adapting to regulatory changes and ensuring adherence to standards is crucial for avoiding legal issues and maintaining trust among stakeholders.

Financial Sustainability: Achieving and sustaining profitability in a competitive market requires efficient cost management, revenue optimization, and strategic investments in growth areas.

Addressing these challenges requires a deep understanding of Zomato's business operations, market dynamics, and customer behaviors. Through data-driven analysis using tools like Power BI, Zomato can gain valuable insights into these aspects and develop strategies to overcome challenges and capitalize on opportunities for growth and success.

Proposed Solution:

To tackle the challenges and opportunities in the online food delivery market, Zomato can leverage Power BI. By creating an integrated dashboard, Zomato can monitor key metrics like orders, revenue, and customer satisfaction scores. Power BI's geospatial analysis will aid in understanding market presence across regions, guiding expansion strategies. Customer segmentation tools will enable personalized marketing, while trend analysis will inform demand forecasting and menu planning. Operational efficiency can be improved through monitoring and optimizing processes with Power BI dashboards. Comparative analysis against competitors, sentiment analysis of customer reviews, and predictive analytics for demand forecasting further enhance decision-making. Collaborative reporting and insights sharing ensure alignment across teams. This comprehensive solution empowers Zomato to make data-driven decisions, optimize operations, and stay competitive in the market.

Feature:

Real-Time Data Updates: Power BI can connect to live data sources, ensuring that dashboards and reports reflect the most up-to-date information. This real-time data capability enables Zomato to make timely decisions based on the latest insights.

Customer Segmentation: Segmentation of Zomato's customer base based on demographics, behavior, and preferences. Insights into high-value customer segments and strategies to target them effectively.

Trend Analysis: Identification of trends in food preferences, ordering habits, and popular cuisines. Seasonal variations in demand and their impact on business.

Predictive analysis: It involves using historical data, statistical algorithms, and machine learning techniques to forecast future outcomes or trends.

Advantages:

Improved Decision-Making: Predictive analysis provides valuable insights into future trends and outcomes, enabling Zomato to make informed decisions regarding inventory management, pricing strategies, marketing campaigns, and resource allocation.

Enhanced Efficiency: By accurately forecasting demand, Zomato can optimize its operations, ensuring that resources are allocated efficiently to meet expected demand levels. This results in reduced waste, improved inventory turnover, and better utilization of delivery resources.

Increased Revenue: Predictive analysis enables Zomato to identify revenue opportunities and optimize pricing strategies based on demand fluctuations, customer behavior, and market trends. This allows Zomato to maximize revenue while remaining competitive in the market.

Better Customer Experience: By personalizing menu offerings, promotions, and recommendations based on predictive analysis of customer preferences, Zomato can enhance the user experience, increase customer satisfaction, and drive repeat business.

Scope:

The scope of implementing predictive analysis for Zomato using Power BI encompasses several key areas:

Demand Forecasting: Predictive models will be developed to forecast future demand for food delivery services based on historical data, seasonal trends, and other relevant factors. This includes predicting demand for specific cuisines, dishes, and delivery times in different regions.

Customer Segmentation and Personalization: Predictive analysis will be used to segment Zomato's customer base and predict individual customer preferences, behavior, and lifetime value. This enables personalized marketing strategies, menu recommendations, and promotions tailored to each customer segment.

Dynamic Pricing Optimization: Predictive models will be employed to optimize pricing strategies for Zomato's services based on factors such as demand fluctuations, competitor pricing, and customer behavior. This includes dynamically adjusting prices in real-time to maximize revenue and competitiveness.

Churn Prediction: Predictive analysis will be utilized to predict which customers are at risk of churning or discontinuing their use of the platform based on engagement metrics and historical data. This enables targeted retention efforts and interventions to prevent customer churn and maximize customer lifetime value.

Menu Personalization: Predictive models will be developed to personalize the menu offerings displayed to individual customers based on their past preferences, dietary restrictions, and ordering history. This enhances the user experience by presenting relevant and appealing food options tailored to each customer's tastes.

Operational Optimization:: Predictive analysis will be used to optimize Zomato's operational processes, including inventory management, staffing, and delivery logistics. This ensures efficient resource allocation and service delivery to meet expected demand levels and enhance operational efficiency.

Risk Management: Predictive analysis will help identify potential risks and challenges, such as supply chain disruptions or market fluctuations, enabling proactive risk management measures to minimize the impact on Zomato's operations and financial performance.

The scope also includes the implementation of these predictive models within the Power BI platform, enabling Zomato to visualize and interpret the results through interactive dashboards and reports. Additionally, the scope encompasses ongoing monitoring, refinement, and optimization of the predictive models to ensure their accuracy and effectiveness in driving business outcomes for Zomato.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

Services Used:

Data Collection and Storage Services: Zomato can utilize Microsoft Azure offerings such as Azure Data Lake Storage, Azure SQL Database, Azure Blob Storage, Azure Cosmos DB, and Azure Data Factory. These services provide scalable and secure storage solutions for structured and unstructured data, multimedia content, and semi-structured data. Azure Data Factory facilitates the creation of data pipelines for ingesting and transforming data from diverse sources into Azure storage services, ensuring efficient data collection and management for predictive analysis.

Data Processing Services: Zomato can utilize Microsoft Azure services like Azure Databricks, Azure HDInsight, and Azure Synapse Analytics. These platforms enable scalable data processing and analytics, allowing Zomato to efficiently ingest, transform, and analyze large datasets. With these tools, Zomato can extract valuable insights from its data to enhance decision-making and operational efficiency.

Machine Learning Services: Zomato can leverage Microsoft Azure offerings like Azure Machine Learning, Azure Cognitive Services, and Azure AutoML. These platforms facilitate the development, training, and deployment of machine learning models at scale. With pre-trained models for tasks like natural language processing and computer vision, Zomato can enhance customer experiences and optimize operations using insights derived from its data.

Tools and Software Used:

Tools:

- **Power BI:** Power BI will serve as the primary tool for data visualization, analytics, and reporting. It provides a user-friendly interface for creating interactive dashboards and reports to visualize insights derived from predictive analysis.
- **Power Query:** Power Query in Power BI is a data transformation tool used to clean, shape, and prepare data for analysis. It allows users to connect to various data sources, apply transformations, and perform tasks like filtering and sorting without coding. With its intuitive interface and built-in functions, Power Query simplifies the data preparation process, making it easier to get data ready for visualization and analysis in Power BI.

Software Rrquirements:

- **Power BI Desktop:** Power BI Desktop will be used for data preparation, model development, and dashboard creation. It provides a comprehensive suite of tools for data visualization, analytics, and reporting.
- **Power BI Service:** Power BI Service is the cloud-based platform for publishing, sharing, and collaborating on Power BI reports and dashboards. It allows users to access reports from any device and facilitates collaboration among team members.

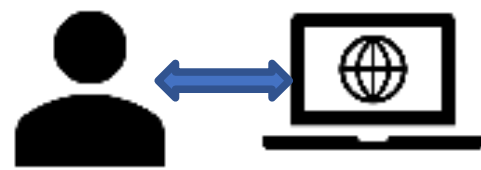
- **Power BI Mobile:** Power BI Mobile is a mobile application that allows users to access and interact with Power BI reports and dashboards on their iOS, Android, or Windows devices. With this app, users can view, share, and analyze data in real-time, enabling informed decision-making while on the go.
- **Python or R:** Either Python or R programming language will be used for advanced analytics, machine learning model development, and data preprocessing.

CHAPTER 3

PROJECT ARCHITECTURE

Architecture

USER



FRONTEND



HTML 5

BACKEND



NODEJS 14.0

Database



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

Data Sources: Various data sources such as Zomato's transactional databases, customer reviews, external APIs, and third-party data providers provide the raw data required for analysis.

Data Collection and Storage: Data from different sources is collected, cleaned, and stored in a centralized repository. This may involve using Azure Data Lake Storage, Azure SQL Database, or Azure Blob Storage for structured and unstructured data storage.

Data Processing: Data processing services like Azure Databricks, Azure HDInsight, or Azure Synapse Analytics are used for data transformation, cleansing, and feature engineering tasks. This prepares the data for analysis and modeling.

Machine Learning Model Development: Azure Machine Learning Studio or Python/R programming languages are employed to build and train machine learning models. These models are trained using historical data to predict future outcomes, such as demand forecasting or customer churn prediction.

Integration with Power BI: The trained machine learning models are integrated into Power BI using Power Query or Power BI Embedded. This allows for seamless incorporation of predictive analytics insights into Power BI reports and dashboards.

Visualization and Reporting: Power BI Desktop is used to create interactive reports and dashboards that visualize the insights derived from

predictive analysis. These reports can be shared and accessed through Power BI Service or Power BI Mobile for collaborative decision-making.

Continuous Monitoring and Optimization: The deployed predictive models and Power BI reports are continuously monitored for performance and accuracy. Feedback from stakeholders is incorporated to refine and optimize the models and visualizations over time.

This high-level architecture leverages the capabilities of Microsoft Azure services for data storage, processing, and machine learning, while integrating seamlessly with Power BI for data visualization and reporting. It enables Zomato to derive actionable insights from its data, optimize business processes, and make informed decisions to stay competitive in the online food delivery market.

CHAPTER 4

MODELING AND RESULT

Manage relationship

The “**KPIs**” file will be used as the main connector as it contains most identifier (Country, Country Code) which can be use to relates the 6 data together. The “**Country Master**” file is used to link the Zomato Asia with “**Restaurants Id**”.

Manage relationships

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

New...

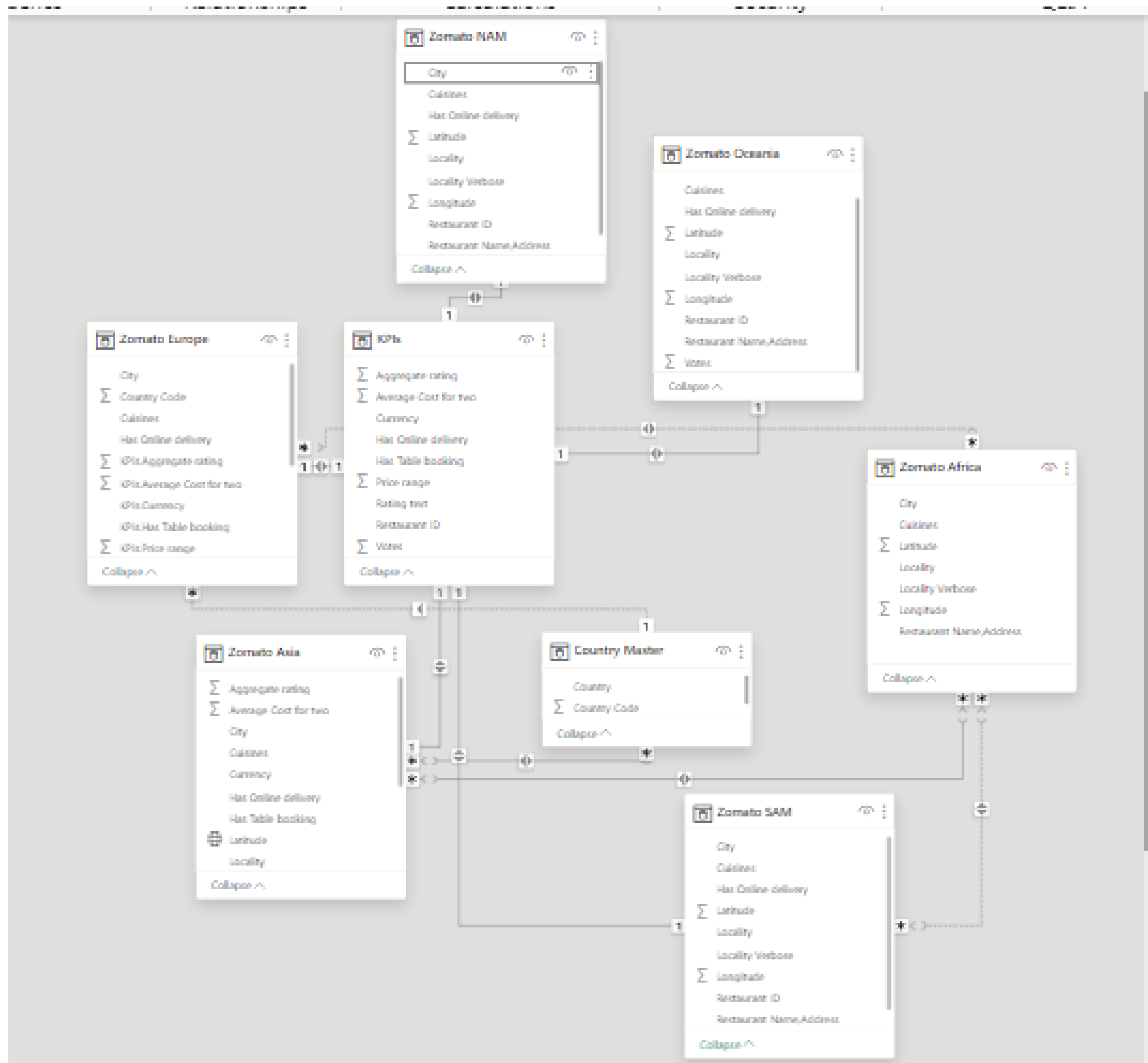
Autodetect...

Edit...

Delete

Close

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Edit relationship

Select tables and columns that are related.

Country Master

Country Code	Country	Region
94	Indonesia	Asia
191	Sri Lanka	Asia
214	UAE	Asia

Zomato Asia

Restaurant ID	City	Restaurant Name,Address	Locality	Locality Ver
18489513	New Delhi	Tandoori Kebab,356 Narmada, Alaknanda, New Delhi	Alaknanda	Alaknanda, New Delhi
18457050	New Delhi	Puran Dhaba,Shop J-11/11, Sanjay Market, Opposite Ni...	Ashok Vihar Phase 1	Ashok Vihar Phase 1
302871	New Delhi	Punjabi Chicken,9, Babu Market, Fuwara Chowk, Chand...	Chandni Chowk	Chandni Chowk, New Delhi

Cardinality

Many to many (*:*)

Cross filter direction

Single (Country Master filters Zomato Asia)

☒ Make this relationship active
 ☐ Apply security filter in both directions
 ☐ Assume referential integrity

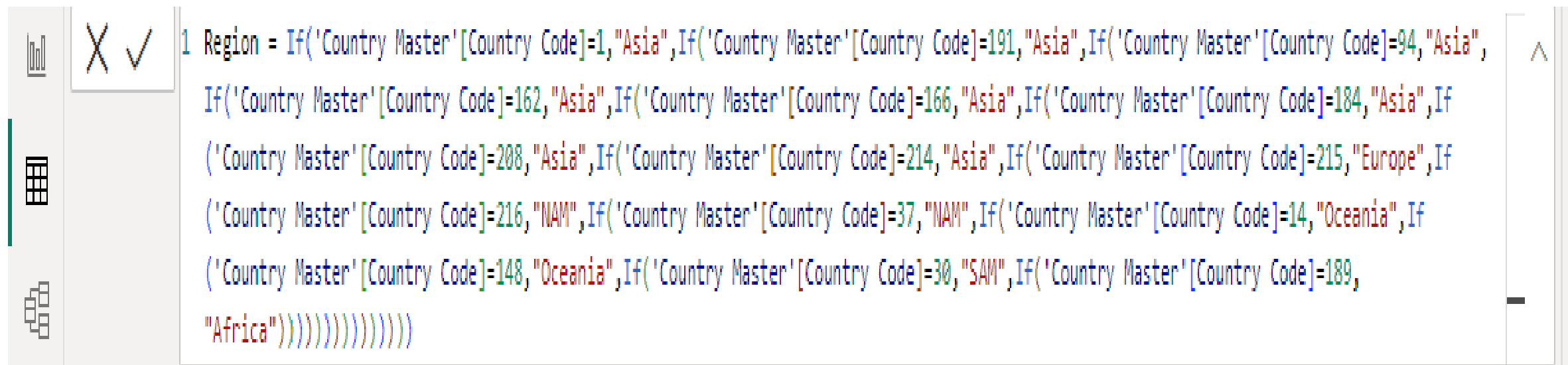
⚠ This relationship has cardinality Many-Many. This should only be used if it is expected that neither column (Region and City) contains unique values, and that the significantly different behavior of Many-many relationships is understood. [Learn more](#)

OK

Cancel

In Power BI, editing relationships between tables is essential for refining how data is linked and analyzed within reports and visualizations. To edit a relationship, users navigate to the "Manage Relationships" option in the "Modeling" tab, which opens the Relationship View displaying all existing connections. Once a specific relationship is selected, users can modify properties such as the tables involved, primary and foreign key fields, and cardinality to accurately represent the data's structure. Additionally, users can choose to enforce referential integrity to maintain data consistency and specify cross-filtering directions to control how filters are applied across related tables. Testing the relationship with sample data ensures its effectiveness before applying the changes, which are automatically reflected in the data model. Through meticulous relationship editing, Power BI users can tailor their data models to meet specific analytical needs, ensuring accurate and insightful reporting capabilities.

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"))))))))))))
```

The Conditional Column feature in Power BI offers users a versatile tool for enhancing data analysis and interpretation. By defining specific conditions, users can generate new columns within their datasets tailored to their analytical needs. These columns serve multiple purposes, such as segmenting data into meaningful categories, flagging outliers or exceptions, calculating custom metrics, grouping data for aggregation, filtering out irrelevant information, and assigning labels to data points. With this capability, users can efficiently manipulate and enrich their datasets, gaining deeper insights and making more informed decisions. Whether it's identifying trends, outliers, or performance indicators, the Conditional Column feature empowers users to unlock the full potential of their data within the Power BI environment, facilitating more accurate and actionable analysis.

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 dataset, a new column named 'Region' has been added to facilitate the identification of countries based on their country codes. Each country code corresponds to a unique region, making it easier to utilize slicers for quick access.

Merge

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

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	
6401060	180	Rand(R)	No	No	2	

Zomato Asia

Restaurant ID	Country Code	City	Restaurant Name,Address	
6317637	162	Makati City	Le Petit Souffle,Third Floor, Century City Mall, Kalayaan...	Century City
6304287	162	Makati City	Izakaya Kikufuji,Little Tokyo, 2277 Chino Roces Avenue,...	Little Tokyo,
6300002	162	Mandaluyong City	Heat - Edsa Shangri-La,Edsa Shangri-La, 1 Garden Way,...	Edsa Shangri
6318506	162	Mandaluyong City	Ooma,Third Floor, Mega Fashion Hall, SM Megamall, Or...	SM Megama
6318506	162	Mandaluyong City	Ooma,Third Floor, Mega Fashion Hall, SM Megamall, Or...	SM Megama

Join Kind

Left Outer (all from first, matching from second)

☐ Use fuzzy matching to perform the merge

▸ Fuzzy matching options

✓ The selection matches 8849 of 9551 rows from the first table.

OK

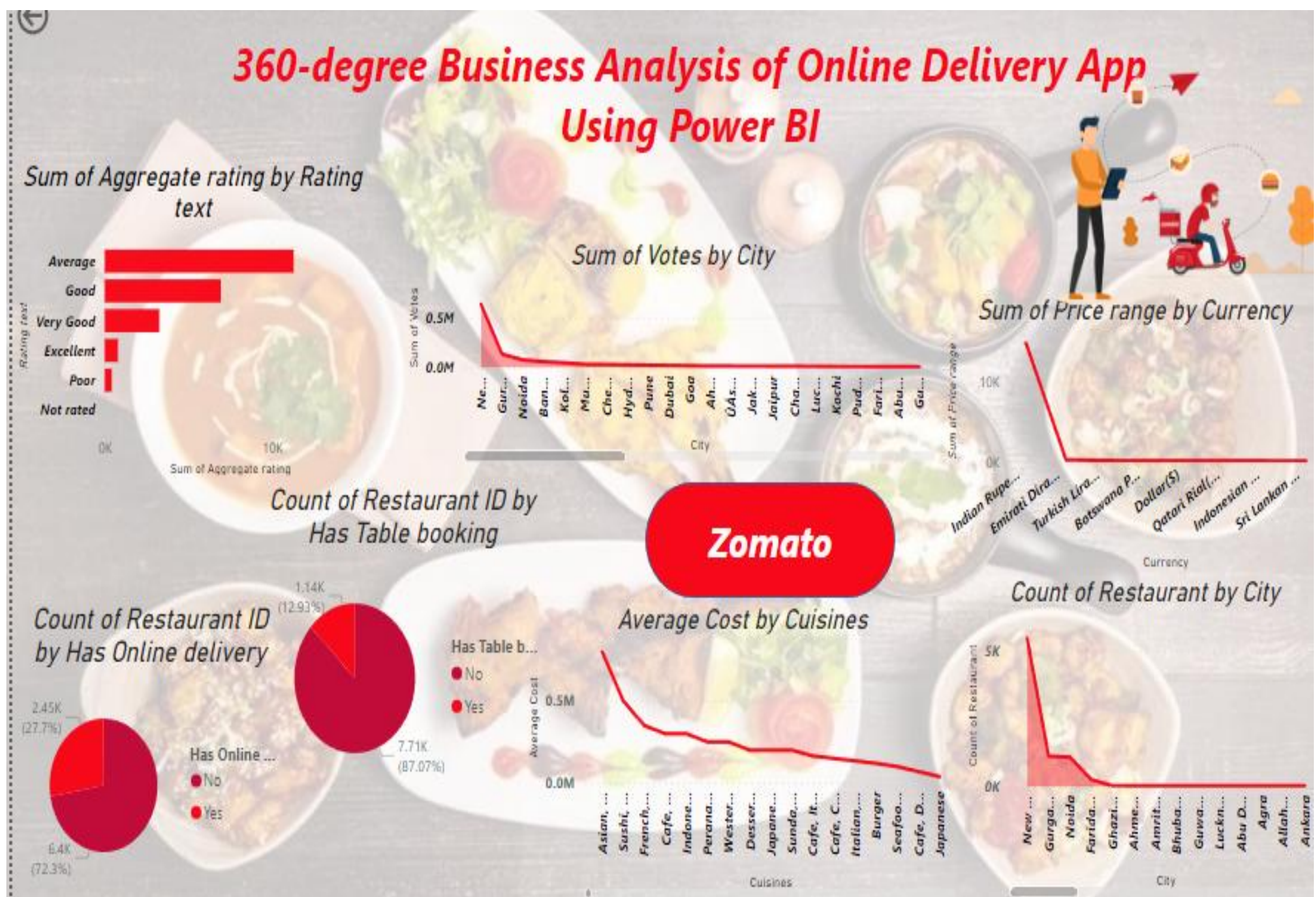
Cancel

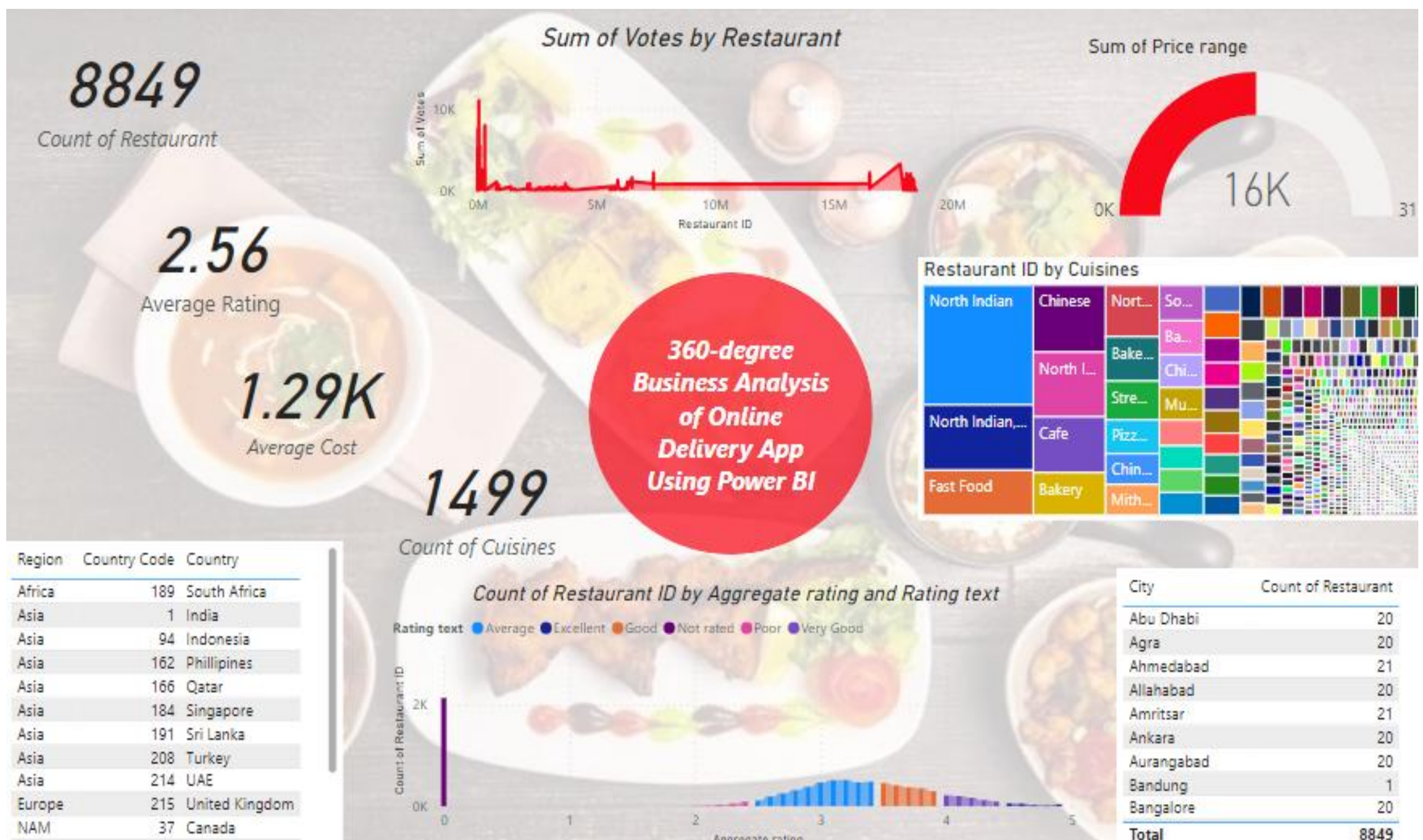
Merging tables in Power BI is a key process for consolidating and enriching datasets. Users access the Query Editor, select tables, specify join types, and define columns for merging. Once confirmed, the merged data is available for analysis in reports and visualizations. This simplifies data integration and enhances analytical capabilities for informed decision-making.

Europe 4

,

Dashboard:





CONCLUSION

In conclusion, the analysis of Zomato's online delivery app using Power BI reveals valuable insights that can drive strategic decision-making and enhance operational efficiency. Through a comprehensive examination of key metrics, such as customer behavior, sales performance, and market trends, Zomato can gain a deeper understanding of its business landscape and identify areas for improvement. Leveraging Power BI's advanced analytics capabilities, Zomato can uncover patterns, forecast future outcomes, and optimize its service offerings to meet customer needs effectively. By integrating predictive analysis, data visualization, and actionable insights, Zomato can position itself for sustained growth and competitiveness in the dynamic online food delivery market. With continued utilization of Power BI's features and ongoing refinement of analytical approaches, Zomato can stay ahead of the curve and drive innovation in the delivery app industry.

FUTURE SCOPE

Looking ahead, the future scope for Zomato's online delivery app analysis using Power BI is promising and multifaceted. Firstly, the integration of advanced machine learning algorithms and predictive analytics holds significant potential. By forecasting demand, optimizing delivery routes, and personalizing recommendations, Zomato can enhance customer experiences and operational efficiency. Moreover, exploring emerging trends such as sentiment analysis and natural language processing can provide deeper insights into customer feedback and preferences, enabling proactive service improvements.

Additionally, there is ample room for geographical expansion and market penetration. As Zomato continues to grow its user base and restaurant network globally, Power BI can facilitate comprehensive market analysis, aiding in strategic decision-making regarding market entry, expansion, and localization efforts. Furthermore, tapping into demographic segmentation and user behavior analysis can enable targeted marketing campaigns and personalized experiences, fostering customer loyalty and retention.

Furthermore, leveraging real-time data streams and IoT (Internet of Things) devices presents exciting opportunities for Zomato. Integrating data from delivery tracking systems, IoT sensors, and social media platforms can provide dynamic insights into customer behavior, delivery performance, and market trends in real-time. This enables Zomato to adapt swiftly to changing market conditions, optimize resource allocation, and provide timely interventions to address emerging issues.

In conclusion, the future scope for Zomato's analysis using Power BI is expansive, encompassing advanced analytics, market expansion, personalized experiences, and real-time insights. By harnessing the full potential of Power BI's capabilities and embracing emerging technologies, Zomato can solidify its position as a market leader in the online food delivery industry and drive sustained growth and innovation in the years to come.

REFERENCES

https://medium.com/@manya_gulati27/zomato-restaurant-data-8e2611ce82cd

LINK

<https://app.powerbi.com/view?r=eyJrljoiZTQwMWNmZDltMmVjZi00NDI4LTliNzYtYjI2YzU2ZTkxZTA2liwidCI6ImQ3MjdjOTQ4LTU0YmUtNDVIYy1hYzAzLWJkYWlwNzg3YTm4YSJ9>

