Tech Saksham

Case Study Report

Data Analytics with Power BI

“360-degree Business Analysis of Online Delivery Apps”

“S.T. Hindu College”

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ABSTRACT

This paper presents a comprehensive 360-degree business analysis of Zomato's delivery application utilizing Power BI, a powerful business analytics tool. Through data visualization and insights derived from various dimensions such as customer behavior, delivery patterns, restaurant performance, and market trends, this analysis aims to provide a holistic understanding of Zomato's delivery ecosystem. By leveraging Power BI's capabilities, we delve into key metrics including order volumes, delivery times, customer satisfaction ratings, and revenue trends to uncover actionable insights for optimizing operational efficiency, enhancing customer experience, and driving business growth. The integration of advanced analytics techniques within Power BI allows for predictive modeling and trend forecasting, enabling Zomato to anticipate market shifts, tailor marketing strategies, and make informed decisions to stay competitive in the dynamic food delivery landscape. This study underscores the significance of leveraging data-driven insights through Power BI to drive strategic decision-making and foster sustainable growth in the on-demand delivery industry.

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CHAPTER 1

INTRODUCTION

1.1 Problem Statement

In the dynamic and competitive landscape of the food delivery industry, Zomato faces the challenge of continuously optimizing its operations to meet customer expectations and stay ahead of the competition. To achieve this, there is a pressing need for a comprehensive 360-degree business analysis of Zomato's delivery apps using Power BI. This analysis aims to delve into various facets of Zomato's delivery ecosystem, including but not limited to order volumes, delivery times, customer satisfaction metrics, restaurant performance, and market trends. By leveraging the power of Power BI, Zomato seeks to extract actionable insights from vast volumes of data generated by its delivery apps to enhance operational efficiency, optimize delivery routes, improve customer experience, identify growth opportunities, and make data-driven decisions to maintain its position as a leader in the food delivery industry. This project will involve integrating data from multiple sources, designing interactive dashboards, and implementing advanced analytics techniques to provide stakeholders with a holistic view of Zomato's delivery operations, thereby empowering them to strategize effectively and drive sustainable growth in a competitive market environment.

1.2 Proposed Solution

To address the multifaceted challenges outlined in the problem statement, a comprehensive solution leveraging Power BI's capabilities is proposed. Firstly, an integrated data pipeline will be established to consolidate data from various sources, including Zomato's delivery apps, CRM systems, and external sources such as weather and traffic data. This data will then be cleansed, transformed, and loaded into a centralized data warehouse for analysis. Utilizing Power BI's robust visualization tools, interactive dashboards will be designed to provide stakeholders with real-time insights into key performance metrics such as order volumes, delivery times, and customer feedback. Advanced analytics techniques, including predictive modeling and machine learning algorithms, will be employed to forecast demand, optimize delivery routes, and personalize the user experience. Additionally, geospatial analysis will be conducted to identify areas with high demand and potential expansion opportunities. Regular monitoring and

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performance tracking will be facilitated through automated alerts and customizable reports, enabling proactive decision-making and continuous improvement. By harnessing the power of Power BI, this solution aims to empower Zomato with actionable insights to drive operational efficiency, enhance customer satisfaction, and maintain its competitive edge in the ever-evolving food delivery landscape.

2.1 Feature

1.Sales performance dashboard with trends over time and regional analysis.
2. Customer segmentation by behavior and demographics for targeted marketing.
3. Delivery performance monitoring with time analysis and agent efficiency.
4. Restaurant partner analysis including revenue metrics and satisfaction ratings.
5. Menu analysis to track popular dishes, trends, and profitability.
6. Financial analysis with revenue, expenses, and forecasting.
7. Operational efficiency dashboard for process optimization and SLA tracking.
8. Market trends and competitor analysis for strategic planning.
9. Geospatial analysis for customer distribution and route optimization.
10. Executive summary dashboard for high-level insights and recommendations.

2.2 Advantages

1. **Comprehensive Insights**: Power BI consolidates data for a holistic view of user interactions, delivery performance, feedback, and market trends.
2. **Real-time Monitoring:** Instant tracking of KPIs like order volume and customer satisfaction ratings facilitates quick decision-making.
3. **Data Visualization:** Interactive dashboards and reports simplify the identification of trends and patterns.
4. **Predictive Analytics:** Machine learning algorithms enable forecasting of demand fluctuations and optimization of delivery routes.
5. **Cost Optimization:** Identifies opportunities for reducing operational costs and improving profitability.
6. **Enhanced Customer Experience:** Tailors services based on customer preferences and feedback.

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2.3 Scope

Conducting a comprehensive 360-degree business analysis of Zomato delivery apps using Power BI presents an exciting opportunity to delve deep into the operational dynamics, customer behaviors, and market trends shaping the food delivery industry. With Power BI's robust analytics capabilities, one can explore various dimensions of Zomato's business, including order volumes, delivery times, customer satisfaction metrics, and revenue streams. By leveraging Power BI's intuitive dashboards and data visualization tools, analysts can uncover actionable insights to optimize delivery operations, enhance customer experiences, and drive business growth.

At the operational level, Power BI can provide real-time visibility into key performance indicators such as order processing times, delivery fleet efficiency, and restaurant partner performance. By analyzing historical data trends and patterns, stakeholders can identify operational bottlenecks, streamline processes, and improve resource allocation to ensure timely and efficient deliveries.

Customer behavior analysis is another critical aspect that Power BI can illuminate. Through advanced analytics techniques like segmentation and cohort analysis, analysts can gain a deep understanding of customer preferences, ordering habits, and satisfaction levels. This knowledge can inform targeted marketing campaigns, personalized recommendations, and loyalty programs aimed at enhancing customer retention and lifetime value.

Moreover, Power BI's geographical mapping capabilities can offer valuable insights into market trends and competitive dynamics. By visualizing customer density, delivery coverage areas, and competitor presence, stakeholders can identify lucrative growth opportunities, optimize delivery routes, and make informed expansion decisions.

Revenue analysis is integral to any business assessment, and Power BI can facilitate a comprehensive examination of Zomato's revenue streams. From analyzing transactional data to tracking revenue trends across different demographics and service offerings, stakeholders can pinpoint revenue drivers, optimize pricing strategies, and maximize profitability.

Overall, a 360-degree business analysis of Zomato delivery apps using Power BI holds immense potential to unlock actionable insights that drive operational efficiency, enhance customer satisfaction, and fuel strategic decision-making in the fiercely competitive food delivery landscape.

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CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 Services Used:

1. **Zomato API:** Access to Zomato's data through their API would be crucial for extracting information related to orders, delivery times, customer feedback, restaurant performance, etc.
2. **Power BI**: Microsoft Power BI is the primary tool for data visualization, analysis, and reporting. It allows you to connect to various data sources, prepare and clean data, and create interactive dashboards and reports.
3. **Data Preparation Tools**: Tools like Microsoft Excel, Power Query (integrated into Power BI), or SQL for data cleaning, transformation, and modeling. These tools are essential for preparing the raw data obtained from Zomato's API for analysis.
4. **Data Visualization Libraries:** Besides Power BI, you might use additional data visualization libraries or tools like D3.js or Plotly.js for creating custom visualizations or enhancing the visual appeal of your reports.
5. **Cloud Storage:** If you're dealing with large datasets, cloud storage solutions like Amazon S3, Google Cloud Storage, or Azure Blob Storage can be used to store and manage the data securely.

2.2 Tools and Software used

Tools:

- **Power BI**: The main tool for this project is Power BI, 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:

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- **Power BI Desktop**: This is a Windows application that you can use to create reports and publish them to Power BI.

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

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

CHAPTER 3

PROJECT ARCHITECTURE

3.1 Architecture

A high-level architecture for the project:

1. **Data Collection**: 360-degree Business Analysis of Online Delivery Apps is collected from various sources like bank transactions, customer interactions, Company data etc.
2. **Data Storage**: The collected data is stored in a database for processing.
3. **Data Processing**: The stored data is processed usual information like restaurant details, online delivery and restaurant rating.
4. **Data Visualization**: The processed data and the results from the predictive models are visualized in real-time using Power BI. Power BI allows you to create interactive dashboards that can provide valuable insights into the data.
5. **Data Access**: The dashboards created in Power BI can be accessed through Power BI Desktop, Power BI Service (online), and Power BI Mobile.

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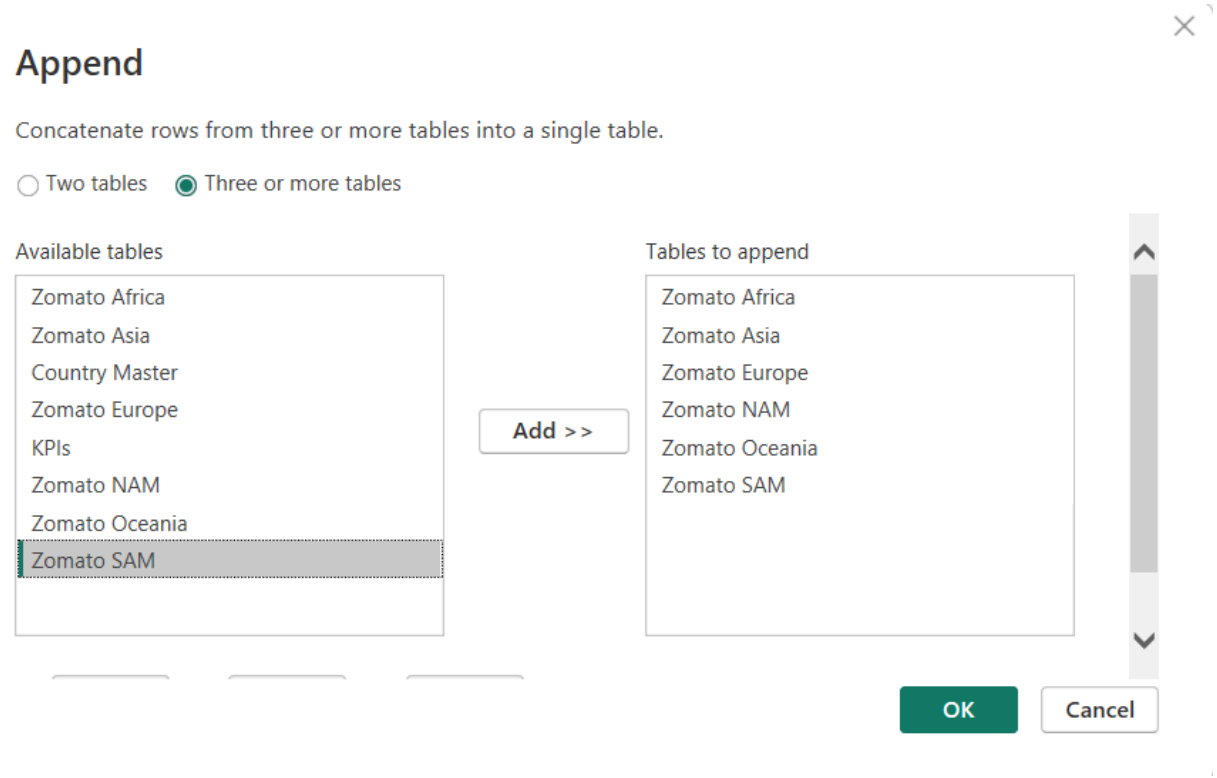
CHAPTER 4

MODELING AND RESULT

Transform data



Append the data source, Zomato Africa, Zomato Asia, Zomato Europe, Zomato NAM, Zomato Oceania, Zomato SAM into a new data source. The new data source was renamed 'Zomato Global'. Then the other sub data source was disabled.

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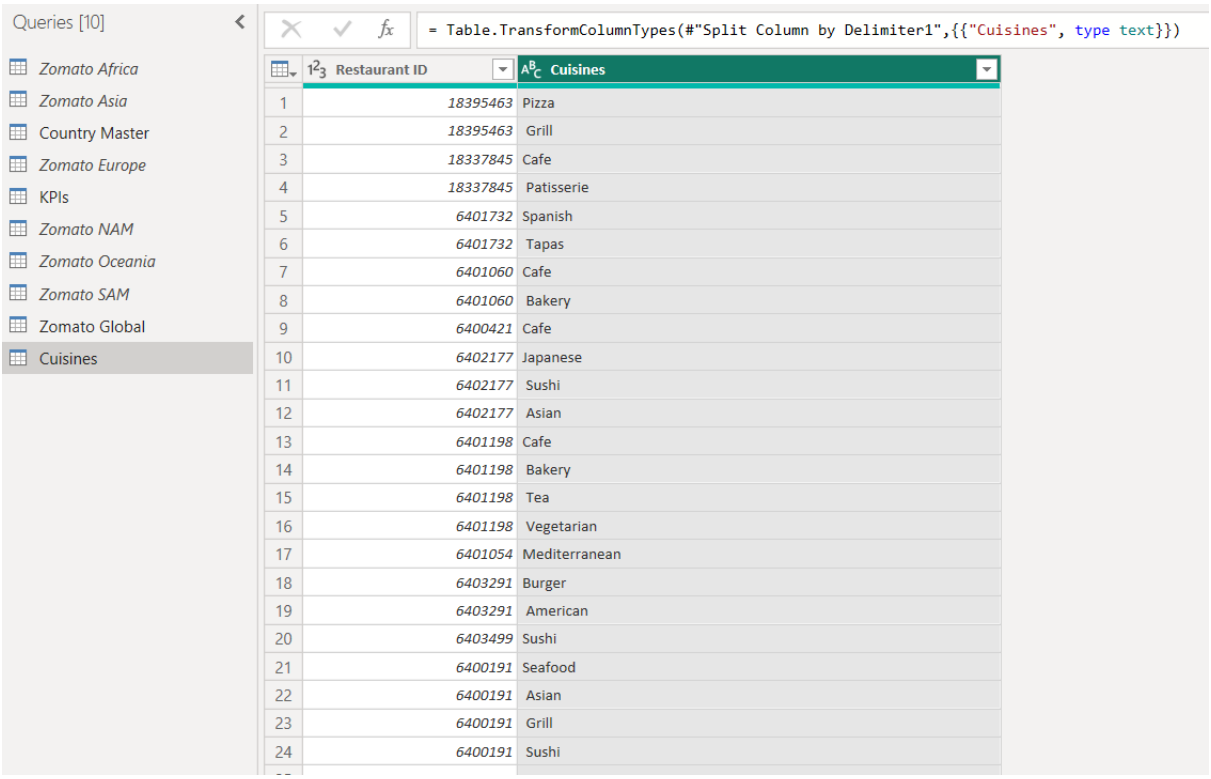

Duplicate the Zomato Global Data source then remove the all columns except Restaurant ID and Cuisines. Renamed the new data into Cuisines. Then split the column cuisines by delimiter format.

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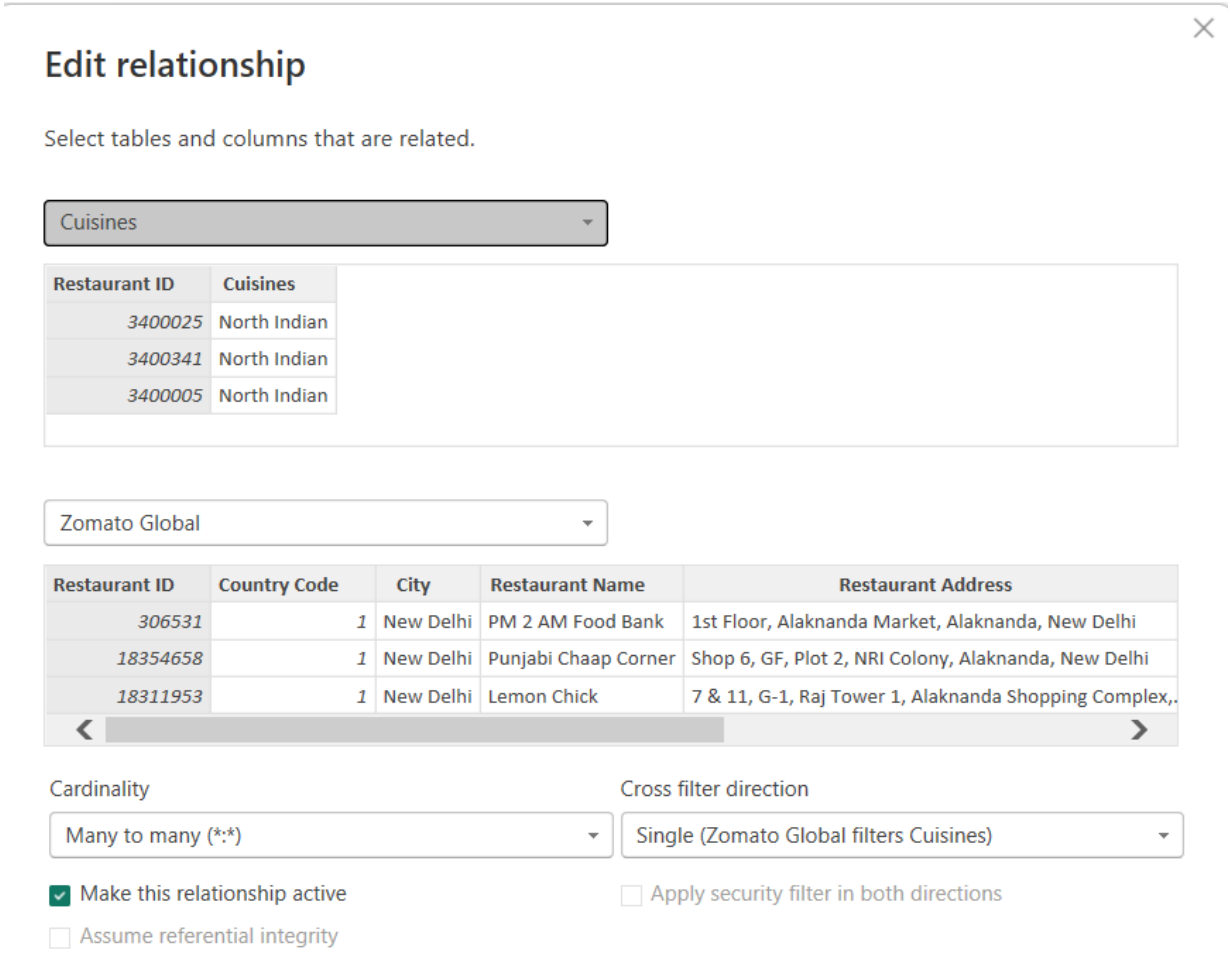
Modified relationship



Remove the Restaurant ID relationship between Fact Table to Cuisines and merge new Restaurant ID relationship between Zomato Global to cuisines in 'many to many' format.

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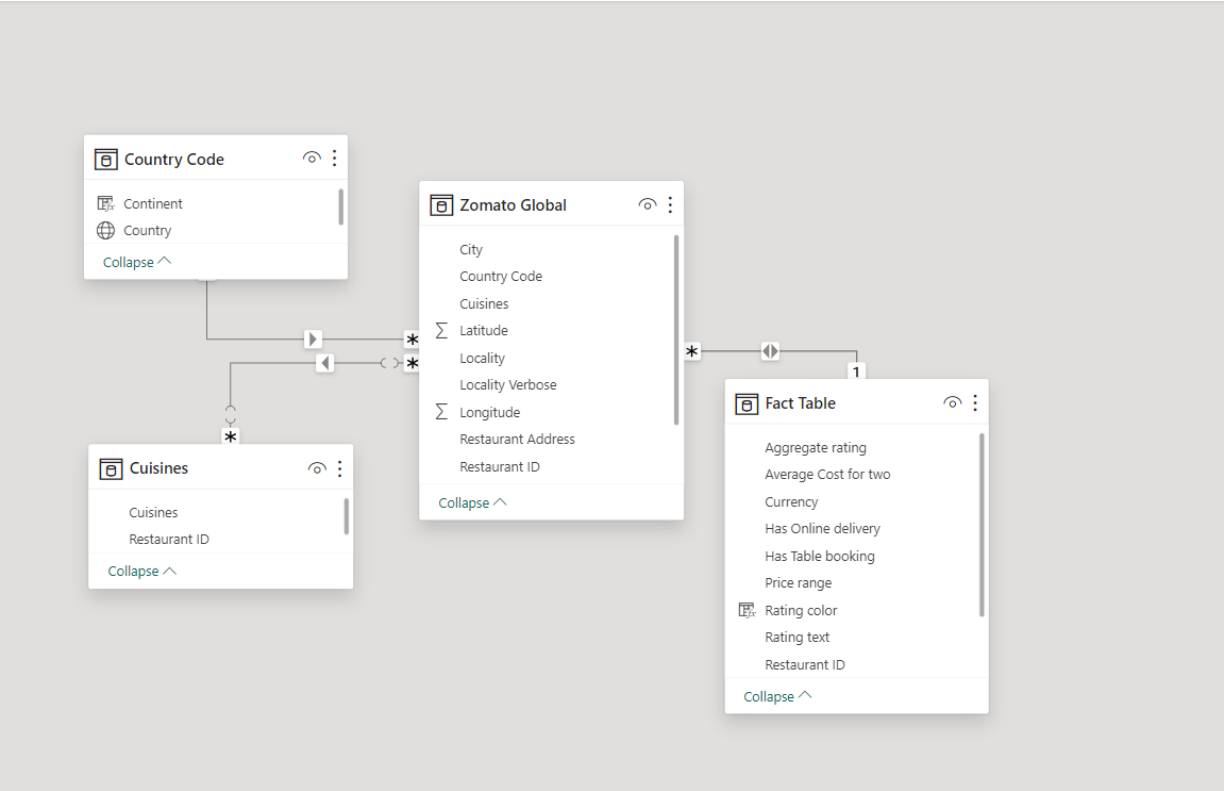

The above model view image shows the relationship of the full data base Zomato Global database to other data sets Fact Table, Country Code, Cuisines.

Modelling rating color

Notice that the Rating color are missing from the Fact table data. These can be formulated from the Aggregate rating column in the fact table by give four color value like red, orange, green, dark green to separate value of Aggregate rating.

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```
1 Rating color = IF('Fact Table'[Aggregate rating]=0,"Not Rated",IF('Fact Table'[Aggregate rating]<=2.9,"Red",IF('Fact Table'[Aggregate rating]<=3.4,"Orange",IF
('Fact Table'[Aggregate rating]<=4.4,"Green",IF('Fact Table'[Aggregate rating]<=5,"Drak Green","Others")))))
```

Restaurant ID	Average Cost for two	Currency	Has Table booking	Has Online delivery	Price range	Aggregate rating	Rating text	Votes	Rating color
18433852	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18465871	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18471268	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18472429	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18471296	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18466420	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18464607	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18464631	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18433879	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18480389	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18446428	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18446082	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18471244	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18424179	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18294253	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18471308	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18471320	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18398616	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18481295	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18462605	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18463989	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18463992	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18451168	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18312606	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18393717	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18392211	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated
18438453	300	Indian Rupees(Rs.)	No	No	1	0	Not rated	0	Not Rated

Apply the colors, show Not Rated to the Aggregate value ‘0’, Red for the values<=2.9, Orange for the values<=3.4, Green for the values<=4.4, Dark green for the values<=5 and other values.

Creating new measurements

```
1 Restaurant Count = COUNT('Zomato Global'[Restaurant ID])
```

Restaurant ID	Country Code	City	Restaurant Name	Restaurant Address
306531	1	New Delhi	PM 2 AM Food Bank	1st Floor, Alaknanda Market, Alaknanda, New Delhi
18354658	1	New Delhi	Punjabi Chaap Corner	Shop 6, GF, Plot 2, NRI Colony, Alaknanda, New Delhi
18311953	1	New Delhi	Lemon Chick	7 & 11, G-1, Raj Tower 1, Alaknanda Shopping Complex, Near Post Office, Alaknanda, New D
18489513	1	New Delhi	Tandoori Kebab	356 Narmada, Alaknanda, New Delhi
3326	1	New Delhi	The Mirch Masala	DDA Murga Market, Near Deep Cinema, Ashok Vihar Phase 1, New Delhi
18457050	1	New Delhi	Puran Dhaba	Shop J-11/11, Sanjay Market, Opposite Nimri Colony, Ashok Vihar Phase 4, Near Ashok Vihar
18375413	1	New Delhi	Rama Desi Ghee Meat Wala	IA, Block 10 C, Ashok Vihar Phase 1, New Delhi
6574	1	New Delhi	Pandit Ji Paranthe Wale	Ashok Vihar Phase 2, New Delhi
1192	1	New Delhi	Apni Rasoi	1, Pocket B, DDA Market, Ashok Vihar Phase 3, New Delhi
18400739	1	New Delhi	Balaji Dhaba	Shop 23, NDMC Market, Babar Road, Near Bengal Market, Barakhamba Road, New Delhi
304211	1	New Delhi	High Street Kitchen & Bar	32, Basant Lok Market, Vasant Vihar, New Delhi
6394	1	New Delhi	Punjabi Tadka	6, UG-64, Ansal Chamber 2, Bhikaji Cama Place, New Delhi
6079	1	New Delhi	Break Fast Point	27, Satnam Park, Bhagat Singh Road, Chander Nagar, New Delhi
6117	1	New Delhi	Breakfast Corner	K-14, Bhagat Singh Road, Satnam Park, Chander Nagar, New Delhi
302490	1	New Delhi	Vaishno Punjabi Dhaba	H 1A, New Gobind Pura, Near, Chander Nagar, New Delhi

Create new measurement ‘Restaurant Count’ using count function to the Restaurant ID in the Zomato Global data source.

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```
1 Average Cost = AVERAGE('Fact Table'[Average Cost for two])
```

Restaurant ID	Average Cost for two	Currency	Has Table booking	Has Online delivery	Price range	Aggregate rating	Ra
18433852	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18465871	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18471268	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18472429	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18471296	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18466420	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18464607	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18464631	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18433879	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18480389	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18446428	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18446082	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18471244	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18424179	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18294253	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18471308	300	Indian Rupees(Rs.)	No	No	1	0	Ne
18471320	300	Indian Rupees(Rs.)	No	No	1	0	Ne

Creating new measurement ‘Average Cost’ by using average function ‘Average Cost for two’ table in the fact table data source.

```
1 Average Rating = AVERAGE('Fact Table'[Aggregate rating])
```

Restaurant ID	Average Cost for two	Currency	Has Table booking	Has Online delivery	Price range	Aggregate rating	Rati
18433852	300	Indian Rupees(Rs.)	No	No	1	0	Not
18465871	300	Indian Rupees(Rs.)	No	No	1	0	Not
18471268	300	Indian Rupees(Rs.)	No	No	1	0	Not
18472429	300	Indian Rupees(Rs.)	No	No	1	0	Not
18471296	300	Indian Rupees(Rs.)	No	No	1	0	Not
18466420	300	Indian Rupees(Rs.)	No	No	1	0	Not
18464607	300	Indian Rupees(Rs.)	No	No	1	0	Not
18464631	300	Indian Rupees(Rs.)	No	No	1	0	Not
18433879	300	Indian Rupees(Rs.)	No	No	1	0	Not
18480389	300	Indian Rupees(Rs.)	No	No	1	0	Not
18446428	300	Indian Rupees(Rs.)	No	No	1	0	Not
18446082	300	Indian Rupees(Rs.)	No	No	1	0	Not
18471244	300	Indian Rupees(Rs.)	No	No	1	0	Not
18424179	300	Indian Rupees(Rs.)	No	No	1	0	Not
18294253	300	Indian Rupees(Rs.)	No	No	1	0	Not
18471308	300	Indian Rupees(Rs.)	No	No	1	0	Not
18471320	300	Indian Rupees(Rs.)	No	No	1	0	Not

Creating new measurement ‘Average Rating’ by using average function to ‘Aggregate rating’ table in the fact table data source.

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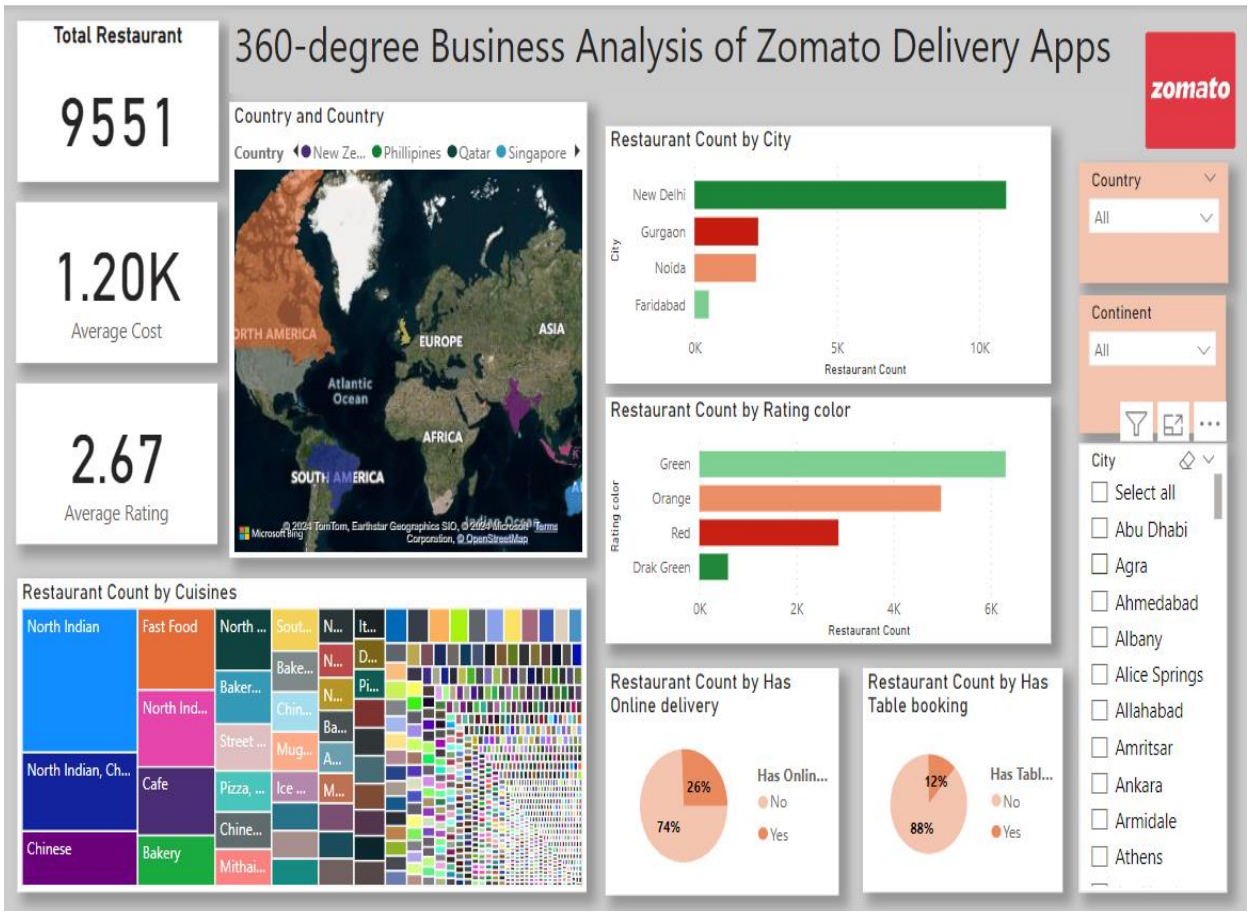
Dashboard



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CONCLUSION

In conclusion, conducting a 360-degree business analysis of Zomato Delivery Apps utilizing Power BI has provided invaluable insights into various facets of its operations. By leveraging Power BI's robust analytics capabilities, Zomato has been able to gain a comprehensive understanding of its delivery ecosystem, including customer behavior, delivery efficiency, market trends, and performance metrics. Through the visualization of data-driven insights, Zomato can make informed decisions to enhance user experience, optimize delivery routes, streamline operations, and ultimately drive business growth. The integration of Power BI into Zomato's analytical framework exemplifies the power of leveraging advanced data analytics tools in today's competitive market landscape, enabling companies to stay agile, responsive, and customer-centric in their approach to business management and decision-making.

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FUTURE SCOPE

The future scope for a "360-degree Business Analysis of Zomato Delivery Apps Using Power BI" is promising and multifaceted. As the digital landscape evolves and the demand for food delivery services continues to rise, leveraging advanced analytics tools like Power BI offers a wealth of opportunities for Zomato and similar platforms.

Firstly, enhancing the depth and breadth of data analysis can provide invaluable insights into customer behavior, preferences, and trends. By integrating data from various sources such as order history, customer feedback, and demographic information, Zomato can gain a comprehensive understanding of user preferences and tailor its services accordingly. This could involve optimizing delivery routes, refining menu offerings, or implementing targeted marketing strategies to maximize customer satisfaction and retention.

Moreover, predictive analytics powered by Power BI can enable Zomato to forecast demand more accurately, thereby optimizing inventory management and resource allocation. By identifying patterns and correlations in historical data, the platform can anticipate peak ordering times, seasonal fluctuations, and popular cuisine trends, ensuring efficient operations and minimizing wastage.

Furthermore, the integration of geospatial analytics capabilities can facilitate location-based decision-making, enabling Zomato to identify lucrative market segments, assess competitor activity, and optimize the placement of delivery partners for maximum coverage and efficiency.

Additionally, incorporating machine learning algorithms into the analysis pipeline can unlock even deeper insights, such as personalized recommendation engines, fraud detection mechanisms, and dynamic pricing models. By continuously learning from new data inputs and user interactions, these models can adapt and evolve over time, further enhancing the platform's competitiveness and value proposition.

In the future, as technology continues to advance and data volumes grow exponentially, the scope for business analysis using Power BI within Zomato's delivery ecosystem will only expand. By staying at the forefront of analytics innovation and leveraging the full potential of their data assets, Zomato can not only drive operational excellence but also foster sustainable growth and differentiation in an increasingly competitive market landscape.

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LINK

https://github.com/Ashwin-A08/360-degree-Business-Analysis-of-Online-Delivery-Apps

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