Tech Saksham
Case Study Report

Data Analytics with Power BI

"360-Degree Business Analysis of Online Delivery Apps Using Power BI"

"Sivanthi Arts and science College for Women"

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ABSTRACT

This abstract presents a comprehensive 360-degree business analysis of online delivery apps utilizing Power BI, a powerful data visualization and analytics tool. By integrating diverse datasets encompassing user engagement metrics, sales performance, customer feedback, and operational efficiency indicators, this study aims to provide a holistic understanding of the online delivery app ecosystem. Through advanced analytics and interactive dashboards, Power BI facilitates the identification of key trends, market opportunities, and areas for improvement within the online delivery sector. Furthermore, leveraging predictive modeling capabilities, the analysis offers insights into future demand patterns and customer behaviour, enabling businesses to optimize strategies for growth and sustainability. This research not only enhances decision making processes for stakeholders but also underscores the transformative potential of data driven insights in shaping the future of online delivery services.

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CHAPTER 1

INTRODUCTION

1.1 Problem Statement

The proliferation of online delivery apps presents a complex landscape rife with challenges for businesses seeking to thrive in this competitive arena. Issues such as fluctuating consumer preferences, intense market competition, operational inefficiencies, and rising customer expectations pose significant hurdles for online delivery service providers. Furthermore, the lack of real-time visibility into key performance metrics, fragmented data sources, and siloed information hinder organizations from making informed decisions. Additionally, navigating regulatory compliance requirements, managing delivery logistics, ensuring data security, and maintaining profitability amidst escalating costs further compound the challenges faced by online delivery app operators. Addressing these multifaceted challenges requires a comprehensive understanding of the online delivery business ecosystem and the implementation of robust analytical frameworks to drive strategic decision-making and sustainable growth.

1.2 Proposed Solution

To address the multifaceted challenges confronting online delivery apps, a holistic and integrated approach is paramount. Implementing advanced data analytics solutions such as Power BI offers a promising solution to streamline operations, optimize performance, and enhance customer experiences. By aggregating and analyzing data from various touchpoints including customer interactions, order processing, delivery logistics, and feedback channels, Power BI enables businesses to gain actionable insights into their operations. Leveraging predictive analytics capabilities, organizations can anticipate demand fluctuations, optimize supply chain management, and improve resource allocation. Additionally, deploying real-time monitoring dashboards empowers decision-makers to identify bottlenecks, track KPIs, and promptly respond to emerging issues. Ultimately, embracing a data-driven approach underpinned by Power BI facilitates agility, innovation, and competitiveness in the ever evolving landscape of online delivery services.

1.3 Feature

- **Integrated Data Aggregation**: Consolidating data from diverse sources including customer interactions, order processing, and feedback channels.

- **Predictive Analytics**: Utilizing advanced predictive modeling to anticipate demand fluctuations and optimize supply chain management.

- **Real-Time Monitoring**: Deploying interactive dashboards for continuous monitoring of key performance indicators and operational metrics.

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- **Actionable Insights**: Extracting meaningful insights from data analysis to inform strategic decision-making and operational improvements.

1.4 Advantages

- **Real-Time Insights**: Power BI provides real-time analytics, enabling businesses to monitor delivery operations as they happen and make immediate adjustments.

- **Data Integration**: It allows for the integration of various data sources such as customer orders, delivery routes, and inventory levels, providing a comprehensive view of operations.

- **Predictive Analytics**: By leveraging predictive modeling, Power BI can forecast demand, optimize delivery routes, and anticipate potential bottlenecks.

- **Operational Efficiency**: Streamlining processes and identifying inefficiencies through data analysis leads to improved operational efficiency and resource utilization.

- **Competitive Advantage**: By leveraging data-driven insights to enhance service quality and efficiency, businesses gain a competitive edge in the crowded online delivery market.

- **Scalability**: Power BI scales with the business, accommodating growth and expansion without compromising performance or data integrity.

- **Data-driven Decision-making**: By harnessing the power of data visualization and analytics provided by Power BI, businesses can make decisions based on empirical evidence rather than intuition, leading to more accurate predictions and better outcomes.

1.5 Scope

The scope of online delivery analysis using Power BI encompasses a wide array of functionalities aimed at optimizing every aspect of the delivery process. From comprehensive data analysis to real-time monitoring, Power BI offers a robust platform for businesses to delve into various facets of their online delivery operations. Leveraging predictive analytics, businesses can forecast demand patterns, optimize delivery routes, and proactively address potential issues. Furthermore, Power BI facilitates in-depth customer insights, enabling businesses to tailor delivery services to individual preferences. Operational efficiency is paramount within this scope, as Power BI assists in identifying bottlenecks, streamlining processes, and optimizing resource allocation. Cost optimization is another key area, with Power BI aiding in identifying cost-saving opportunities and tracking key performance indicators to ensure consistent service quality. With customizable reporting capabilities and scalability, Power BI serves as a powerful decision support tool, empowering businesses to make data-driven decisions swiftly and effectively.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 Services Used

- **Data Integration Services:** Integrating diverse data sources such as customer orders, delivery routes, and inventory databases into Power BI for comprehensive analysis.

- **Predictive Analytics Services:** Leveraging predictive modeling and forecasting services to anticipate demand, optimize delivery routes, and identify potential issues before they occur.

- **Real-time Monitoring Services:** Implementing real-time monitoring services to track key performance indicators (KPIs) such as delivery times, order accuracy, and driver efficiency.

- **Cost Optimization Services:** Leveraging cost optimization services to identify cost saving opportunities, optimize resource allocation, and minimize delivery expenses.

- **Performance Tracking Services:** Tracking and analyzing performance metrics to ensure consistent service quality and identify areas for improvement.

- **Reporting Services**: Generating scheduled reports, automated alerts, and ad-hoc analyses within Power BI to facilitate efficient communication of insights to stakeholders, supporting data-driven decision-making processes across the organization.

- **Analytics Services**: Leveraging Power BI's advanced analytics capabilities to conduct predictive modeling, trend analysis, and data mining, providing actionable insights to optimize business strategies and improve operational efficiency.

- **Visualization Services**: Creating interactive dashboards, reports, and visualizations within Power BI to present insights on sales trends, customer behavior, delivery performance, and other key metrics in a visually appealing and easily understandable format.

2.2 Tools and Software used

Tools:

1. **Power BI Desktop:** Power BI Desktop is a desktop application that serves as the primary interface for creating and editing Power BI reports and dashboards. It provides a wide range of data visualization and analysis tools, allowing users to build customized analytics solutions for online delivery apps.

2. **Power BI Service:** The cloud-based platform for publishing, sharing, and collaborating on Power BI reports and dashboards securely across the organization.

3. **Power Query Editor:** Used for data preparation tasks such as cleaning, transforming, and combining data from multiple sources before importing it into Power BI.

4. **Power Pivot**: Power Pivot is a data modeling tool in Power BI that enables users to create relationships between different data tables, perform complex calculations, and create calculated columns and measures, facilitating in-depth analysis and insights generation.

5. **Power View**: Power View is a data visualization tool within Power BI that allows users to create interactive charts, graphs, and maps to visually explore and analyze data, making it easier to identify patterns, trends, and outliers in online delivery app data.

6. **Power Map**: Power Map is a 3D mapping tool in Power BI that allows users to visualize geographic data and analyze spatial patterns, helping businesses understand the geographical distribution of customers, delivery routes, and market opportunities.

Software Requirements:

- **Power BI Desktop:** The primary tool for creating and designing interactive reports and dashboards, facilitating data visualization and analysis.

- **Data Sources:** Access to various data sources such as databases, spreadsheets, and cloud services where online delivery app data is stored, allowing for data integration into Power BI.

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- **ETL (Extract, Transform, Load) Tools:** Software tools or scripts for extracting data from different sources, transforming it into a suitable format, and loading it into Power BI for analysis.

- **Cloud Services:** Integration with cloud platforms such as Microsoft Azure or Amazon Web Services (AWS) for storing and processing large volumes of data, as well as hosting Power BI reports and dashboards.

- **Database Management System (DBMS):** Utilization of a DBMS such as Microsoft SQL Server, MySQL, or PostgreSQL for storing and managing structured data related to online delivery operations.

CHAPTER 3

PROJECT ARCHITECTURE

3.1 Architecture

Here are some points outlining the architecture for analyzing online delivery app using Power BI:

1. **Data Sources:** The architecture starts with various data sources including customer orders, delivery routes, inventory databases, and customer feedback systems.

2. **Data Integration Layer:** Data from diverse sources is integrated using ETL (Extract, Transform, Load) processes to ensure consistency and reliability.

3. **Power BI Service:** Power BI acts as the central analytics platform, providing tools for data visualization, analysis, and reporting.

4. **Data Modeling**: Within Power BI, data modeling techniques are employed to structure and organize the integrated data for analysis.

5. **Predictive Analytics**: Predictive modeling and forecasting capabilities within Power BI are utilized to anticipate demand, optimize delivery routes, and identify trends.

6. **Real-Time Monitoring:** Real-time monitoring features of Power BI enable continuous tracking of key performance indicators (KPIs) such as delivery times and order accuracy.

7. **Visualization**: Data visualization plays a crucial role in 360-degree business analysis, as it enables stakeholders to explore and interpret data insights effectively. Power BI provides a wide range of visualization tools, including Power View and Power Map, which allow users to create interactive charts, graphs, maps, and other visualizations to represent key metrics and trends in the online delivery app data.

8. **Reporting and Collaboration**: Finally, the analysis results are communicated to stakeholders through reports, dashboards, and presentations.

CHAPTER 4

MODELING AND RESULT

Manage relationship

In an online delivery app analyzed through Power BI, managing relationships is essential for extracting meaningful insights efficiently. By establishing one-to-many, many-to-one, and many-to-many relationships between different data tables, the app can correlate customer data with order details, product information, and delivery logistics seamlessly. Bidirectional relationships facilitate flexible navigation, allowing users to explore data from multiple perspectives effortlessly. Additionally, filter direction management ensures precise control over how filters affect related tables, optimizing data analysis. With features like cross-filtering and inactive relationships, Power BI enables dynamic interactions and accommodates complex analytical requirements, empowering stakeholders to make informed decisions based on comprehensive insights.
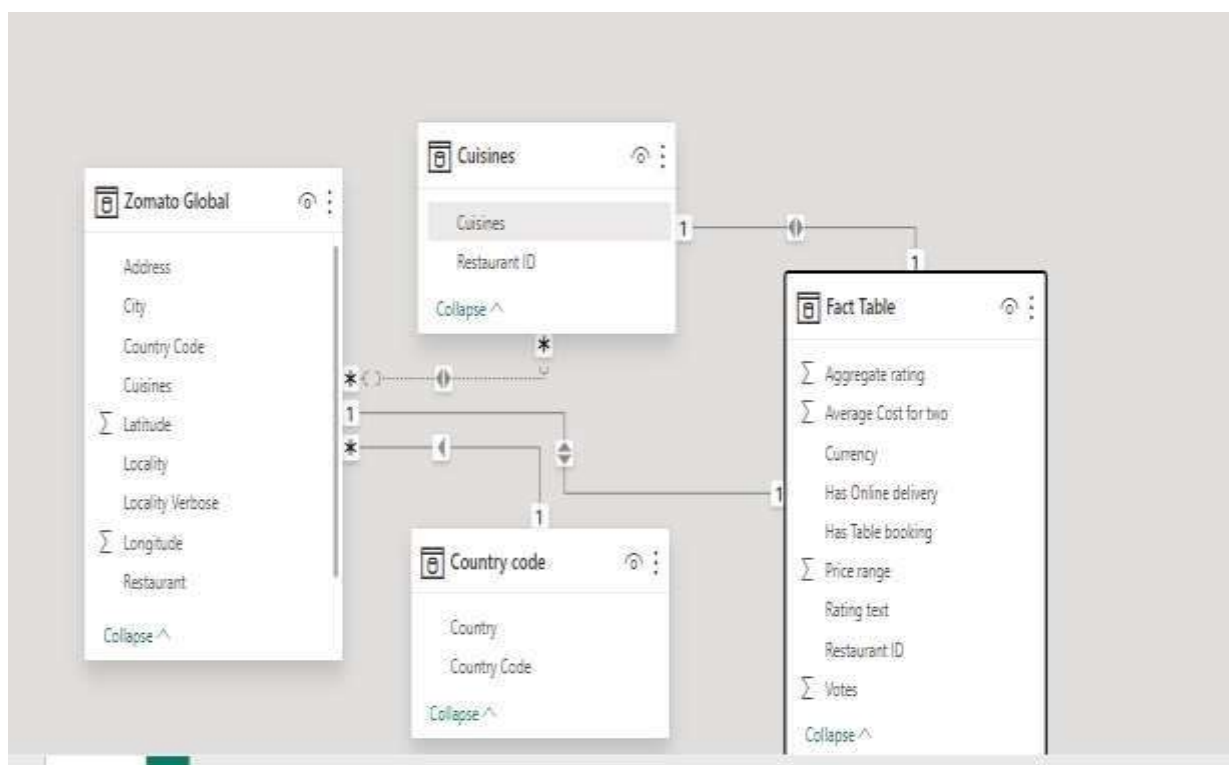
It is a manage relationships for the transform data. Here, we active cuisines to fact table, Zomato global to Country code, Zomato global to Country code and Zomato global as fact table.

Manage relationships

Active	From: Table (Column)	To: Table (Column)
☐	Cuisines (Cuisines)	Zomato Global (Cuisines)
☑	Cuisines (Restaurant ID)	Fact Table (Restaurant ID)
☑	Zomato Global (Country Code)	Country code (Country Code)
☑	Zomato Global (Restaurant ID)	Fact Table (Restaurant ID)

New…   Autodetect…   Edit…   Delete

Close

Create Relationship

Create relationship

Select tables and columns that are related.

Cuisines ▾

Restaurant ID	Cuisines
3400005	North Indian
2400052	North Indian
2200078	North Indian

Zomato Global ▾

Restaurant ID	Country Code	City	Restaurant	Address
306531	1	New Delhi	PM 2 AM Food Bank	1st Floor, Alaknanda Market, Alaknanda
18354658	1	New Delhi	Punjabi Chaap Corner	Shop 6, GF, Plot 2, NRI Colony, Alaknanda
18311953	1	New Delhi	Lemon Chick	7 & 11, G-1, Raj Tower 1, Alaknanda Shopping Complex,.

Cardinality

One to one (1:1) ▾

☐ Make this relationship active

☐ Assume referential integrity

Cross filter direction

Both ▾

☐ Apply security filter in both directions

In this table, I have removed columns of country code, City, Restaurant, Address, Locality, Locality verbose, Longitude, Latitude.

```
= Table.RemoveColumns(#"Renamed Columns1",{"Country Code", "City", "Restaurant", "Address", "Locality",
    "Locality Verbose", "Longitude", "Latitude"})
```

	1²₃ Restaurant ID	AᴮC Cuisines
1	18395463	Pizza, Grill
2	18337845	Cafe, Patisserie
3	6401732	Spanish, Tapas
4	6401060	Cafe, Bakery
5	6400421	Cafe
6	6402177	Japanese, Sushi, Asian
7	6401198	Cafe, Bakery, Tea, Vegetarian

I have transform column types of promoted headers by Restaurant ID, Country Code, City, Restaurant Name, address, Locality, Locality verbose etc,.

```
= Table.TransformColumnTypes(#"Promoted Headers",{{"Restaurant ID", Int64.Type}, {"Country Code", Int64.Type},
    {"City", type text}, {"Restaurant Name,Address", type text}, {"Locality", type text}, {"Locality Verbose",
    type text}, {"Longitude", type number}, {"Latitude", type number}, {"Cuisines", type text}})
```

	1²₃ Restaurant ID	1²₃ Country Code	AᴮC City	AᴮC Restaurant Name,Address
1	6600681	30	Brasí_lia	Chez Michou,SCLN, 208, Bloco A, Loja 30, Asa Norte, Brasí_lia
2	6601005	30	Brasí_lia	Cafí© Daniel Briand,SCLN 104, Bloco A, Loja 26, Asa Norte, Brasí_lia
3	6600292	30	Brasí_lia	Casa do Biscoito Mineiro,SCLN 210, Bloco D, Loja 36/48, Asa Norte, Br...
4	6600441	30	Brasí_lia	Maori,CLN 110, Bloco D, Loja 28, Asa Norte, Brasí_lia
5	6600970	30	Brasí_lia	Pizza íæ Bessa,SCS 214, Bloco C, Loja 40, Asa Sul, Brasí_lia
6	6600379	30	Brasí_lia	Sushi Loko,SCS 213, Bloco C, Loja 35, Asa Sul, Brasí_lia
7	6600214	30	Brasí_lia	Beirute,CLS 109, Bloco A, Loja 2/6, Asa Sul, Brasí_lia
0	6601218	30	Brasí_lia	New Kato SCS 212, Bloco B, Loja 26, Asa Sul, Brasí_lia

In this table I renamed columns and remove columns of Restaurant name, Address 2.1 address etc,.

```
= Table.RenameColumns(#"Removed Columns",{{"Restaurant Name,Address.2.1", "Address"}})
```

#	Restaurant ID	Country Code	City	Restaurant	Address
1	18395463	189	Cape Town	The Butcher's Wife	15 Belgravia Road, Athlone
2	18337845	189	Cape Town	Coco Safar	Ground Floor, Cavendish Square, C
3	6401732	189	Cape Town	La Parada	107 Bree Street, CBD
4	6401060	189	Cape Town	Jason Bakery	185 Bree Street, CBD
5	6400421	189	Cape Town	Truth Coffee	36 Buitenkant Street, CBD
6	6402177	189	Cape Town	Salushi	25 Protea Road, Claremont
7	6401198	189	Cape Town	Origin Coffee Roasting	28 Hudson Street, De Waterkant
8	6401054	189	Cape Town	Kloof Street House	30 Kloof Street, Gardens
9	6403291	189	Cape Town	Jerry's Burger Bar	5 Park Road, Kloof Street, Gardens
10	6403499	189	Cape Town	Active Sushi	32 Hudson Street, Mirage Building,
11	6400191	189	Cape Town	Beluga	The Foundry, Prestwich Street, Gre

I have transformed column from the given data in transform data. Also, I have promoted headers.

```
= Table.TransformColumnTypes(#"Promoted Headers",{{"Restaurant ID", Int64.Type}, {"Country Code", Int64.Type},
    {"City", type text}, {"Restaurant Name,Address", type text}, {"Locality", type text}, {"Locality Verbose",
    type text}, {"Longitude", type number}, {"Latitude", type number}, {"Cuisines", type text}})
```

#	Restaurant ID	Country Code	City	Restaurant Name,Address
1	6317637	162	Makati City	Le Petit Souffle,Third Floor, Century City Mall, Kalayaan Avenue, Pobla..
2	6304287	162	Makati City	Izakaya Kikufuji,Little Tokyo, 2277 Chino Roces Avenue, Legaspi Village.
3	6300002	162	Mandaluyong City	Heat - Edsa Shangri-La,Edsa Shangri-La, 1 Garden Way, Ortigas, Manda.
4	6318506	162	Mandaluyong City	Ooma,Third Floor, Mega Fashion Hall, SM Megamall, Ortigas, Mandalu.
5	6314302	162	Mandaluyong City	Sambo Kojin,Third Floor, Mega Atrium, SM Megamall, Ortigas, Mandal.
6	18189371	162	Mandaluyong City	Din Tai Fung,Ground Floor, Mega Fashion Hall, SM Megamall, Ortigas, .

I have replaced values using replace one value with another in the selected columns. Given country in value to find and replace with by code.
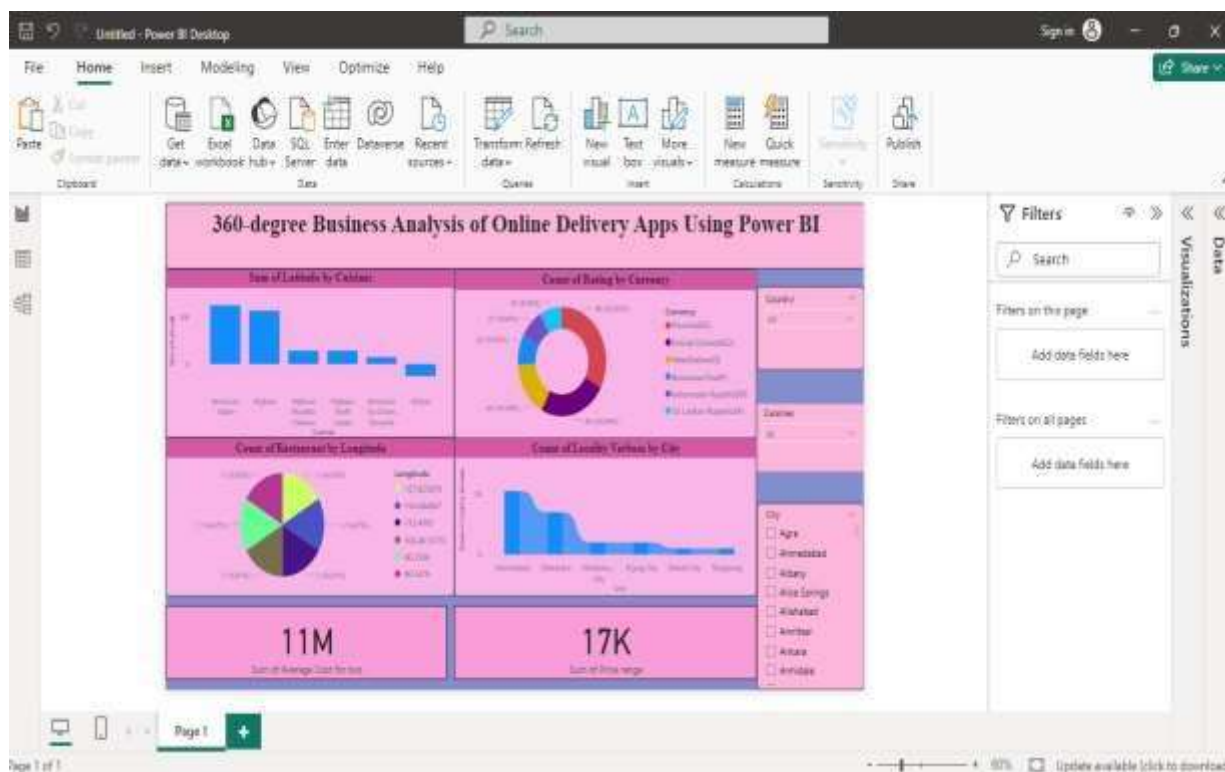
Replace Values

Replace one value with another in the selected columns.

Value To Find

country

Replace With

code

▷ Advanced options

OK   Cancel

Dashboard

CONCLUSION

In conclusion, Power BI emerges as a transformative tool for enhancing the efficiency, insightfulness, and competitiveness of online delivery applications. Through its robust analytics capabilities and intuitive visualization features, Power BI empowers businesses to extract actionable insights from vast and diverse datasets, spanning customer behaviour, delivery operations, and performance metrics. By leveraging advanced analytical techniques such as predictive modeling and real-time monitoring, businesses can optimize delivery routes, anticipate demand fluctuations, and ensure consistent service quality. Moreover, Power BI facilitates informed decision-making by providing stakeholders with clear and customizable reports, enabling them to adapt strategies swiftly in response to evolving market dynamics. As online delivery continues to evolve, Power BI remains a cornerstone for driving innovation, improving operational efficiency, and delivering exceptional customer experiences in the digital landscape.

FUTURE SCOPE

The future scope of leveraging Power BI for online delivery applications is promising, with several avenues for further enhancement and innovation. Firstly, there's an opportunity to integrate additional data sources, such as IoT devices and social media platforms, to gain deeper insights into customer preferences, delivery conditions, and market trends. Secondly, advancements in artificial intelligence and machine learning can be incorporated into Power BI to enable more sophisticated predictive analytics, allowing businesses to anticipate customer demands with greater accuracy and optimize delivery operations proactively. Additionally, expanding the scope of analysis beyond traditional metrics to include sustainability and environmental impact indicators could align online delivery apps with broader societal goals. Furthermore, enhancing the accessibility and usability of Power BI through mobile applications and voice-enabled interfaces can facilitate real-time decision-making for delivery personnel on the field. Collaborative efforts between Power BI developers, online delivery platforms, and industry stakeholders can unlock further potential, driving continuous improvement and innovation in the online delivery ecosystem. Overall, the future scope of Power BI in online delivery apps lies in harnessing emerging technologies, broadening the scope of analysis, and enhancing user experiences to meet the evolving demands of the digital marketplace.

REFERENCES

https://blog.devops.dev/case-study-on-zomato-data-analysis-by-using-power-bicf798cd9c72

LINKS