

Tech Saksham

Case study Report

Data Analytics with Power BI

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

“APC Mahalaxmi College for Women”

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ABSTRACT

The emergence of online delivery apps has transformed the way consumers interact with businesses, particularly in the food and retail sectors. Using Power BI, we integrate data from various sources including app usage logs, transaction records, and customer feedback. Through interactive visualizations and dashboards, we uncover patterns, trends, and correlations within the data. This enables us to identify areas of opportunity and potential challenges within the online delivery app ecosystem. This enables us to identify areas of opportunity and potential challenges within the online delivery app ecosystem. It encompasses sales performance tracking, customer segmentation, delivery efficiency analysis, operational optimization, marketing effectiveness evaluation competitor benchmarking, financial scrutiny, supply chain management, regulatory compliance monitoring, and predictive analytics. By leveraging Power BI's abstraction capabilities, business can extract valuable insights, enabling data-driven decision-making to enhance overall performance, efficiency and customer satisfaction in the dynamic landscape of online delivery services.

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CHAPTER 1

INTRODUCTION

1.1 Problem Statement:

In today's rapidly evolving digital landscape, online apps have become a cornerstone of businesses across various industries, offering convenience, accessibility, and efficiency to users. However, amidst the proliferation of online apps, businesses face numerous challenges in effectively leveraging these platforms to achieve their objectives. Key issues include identifying target demographics, optimizing user experience, maximizing revenue streams, staying ahead of technological advancements, and navigating regulatory and security concerns. Without a comprehensive understanding of these challenges and effective strategies to address them, businesses risk inefficiency, stagnation, and even failure in an increasingly competitive market. Thus, there is a critical need for a thorough business analysis of online apps to identify opportunities, mitigate risks, and drive sustainable growth.

1.2 Proposed solution:

The proposed solution is to develop a PowerBI dashboard that can analyze and visualize real-time online delivery fact data. The dashboard will integrate data from various sources such as fact table, country codes, and . It will provide a comprehensive view of customer preferences, which country uses more delivery services, food ratings, and price range. The dashboard will be interactive, user-friendly, and customizable, allowing customer to tailor it to their specific needs. The real-time analysis capability of the dashboard will enable to respond promptly to changes in customer likes or preferences, identify opportunities for cross-selling and up-selling, and tailor their products and services to enhanced their styles. Understand customer preferences, behaviors, and demographics. Through the analysis gather feedback through surveys, reviews, and ratings. Identify pain points and areas for improvement based on customer experiences.

1.3 Features:

Predictive Analytics: Incorporate predictive analytics models into Power BI to forecast future demand, identify potential churn risk among customers, and optimize resource allocation.

Customer Segmentation: Use Power BI to segment customers based on various attributes such as location, ordering frequency, order value, and preferred cuisine types. Understanding different customer segments can help in targeting marketing efforts and tailoring services to specific customer needs.

Market Analysis: Utilize Power BI to analyze market trends and competitive landscape. This could involve visualizing market share, customer acquisition trends, and comparing the performance of your online delivery app against competitors.

1.4 Advantages:

Customer Understanding: Analyzing customer data allows businesses to gain a deeper understanding of their target audience's behavior, preferences, and demographics. This insight enables personalized marketing strategies, tailored product offerings, and enhanced customer experiences, driving loyalty and retention.

Strategic Planning: Business analysis helps businesses identify strengths, weaknesses, opportunities, and threats (SWOT analysis), guiding strategic planning and decision-making processes.

Risk Management : Business analysis helps businesses identify and mitigate risks such as market volatility, regulatory changes, and supply chain disruptions. By proactively addressing potential threats, businesses can minimize their impact and maintain stability in uncertain environment.

Real-time Decision Making: Business analysis provides real-time insights into various aspects of the business, allowing restaurants to make informed decisions promptly. Whether it's adjusting prices, optimizing delivery routes, or responding to customer feedback, timely decision-making can help restaurants stay competitive in the rapidly evolving online delivery market.

1.5 Disadvantages:

Market saturation: The online food delivery market is highly competitive, with numerous apps vying for market share. Conducting business analysis may reveal challenges such as oversaturation in certain geographic areas or intense competition from established players, making it difficult for new entrants to gain traction.

Complexity: Online delivery apps operate within a complex ecosystem involving various stakeholders, including customers, delivery partners, and competitors. Analyzing this complexity requires sophisticated analytical techniques and expertise, which may not be readily available to all restaurant owners.

Risk of Data Overload: With access to vast amounts of data, there's a risk of information overload, where businesses become overwhelmed by the sheer volume of data available.

Cost of Implementation: Implementing a comprehensive business analysis solution can still incur significant costs. This includes expenses related to software licenses, infrastructure, training, and on going support.

1.6 Scope:

Feedback Analysis: Gathering and analyzing feedback from customers, restaurants, delivery drivers, and other stakeholders to identify areas for improvement and enhance customer satisfaction.

UX/UI Analysis: Analyzing user experience (UX) and user interface (UI) design aspects of the app to ensure ease of use, intuitive navigation, and engaging interactions. Conducting usability testing and gathering feedback for iterative improvements.

Future Outlook: Forecasting future trends and developments in the online delivery market, including technological advancements, changing consumer preferences, regulatory changes, and competitive dynamics.

Customer Experience: Analyzing the end-to-end customer experience, including user interface design, ease of ordering, delivery speed, order accuracy, customer support, and satisfaction levels.

Operational Efficiency: Evaluating the operational efficiency of online delivery apps, including order processing, delivery logistics, driver management, inventory management, and fulfillment processes.

Technology Assessment: Assessing the technology stack required for the app's development, deployment, and maintenance. This includes evaluating options for app development frameworks, databases, hosting platforms, payment gateways, and third-party integrations. Technology plays a vital role in online delivery because all the people oreded food whenever the want.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 Service used:

- **Data Integration Services:** Services for data integration are crucial for collecting and consolidating data from various sources such as transactional databases, customer feedback platforms, delivery tracking systems, and market research databases. Tools like Microsoft Power Automate, Azure Data Factory, or third-party services like Zapier can be used for seamless data integration.
- **Data Warehousing:** Storing and organizing data efficiently is essential for performing analytics effectively. Data warehousing services such as Azure Synapse Analytics or Amazon Redshift can be used to store large volumes of structured and unstructured data for analysis.
- **Cloud Storage:** Cloud storage solutions like Azure Blob Storage or Amazon S3 can be used to store raw data, intermediate data, and processed datasets securely, making it accessible for analysis by Power BI and other tools.
- **Machine Learning Services:** Integrating machine learning models into the analysis pipeline can provide predictive analytics capabilities for tasks such as demand forecasting, customer segmentation, and route optimization. Azure Machine Learning or Amazon SageMaker are examples of machine learning services that can be integrated with Power BI.

2.2 Tools & Software used :

Tools:

- **PowerBI:** The main tool for this project is PowerBI, which will be used to create interactive dashboards for real-time data visualization.
- **Power Query:** This is a data connection technology that enables us to discover, connect, combine, and refine data across a wide variety of sources.

Software Requirements:

- **PowerBI Desktop:** This is a Windows application that we can use to create reports and publish them to PowerBI.
- **PowerBI Service:** This is an online SaaS (Software as a Service) service that we use to publish reports, create new dashboards, and share insights.

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

CHAPTER 3

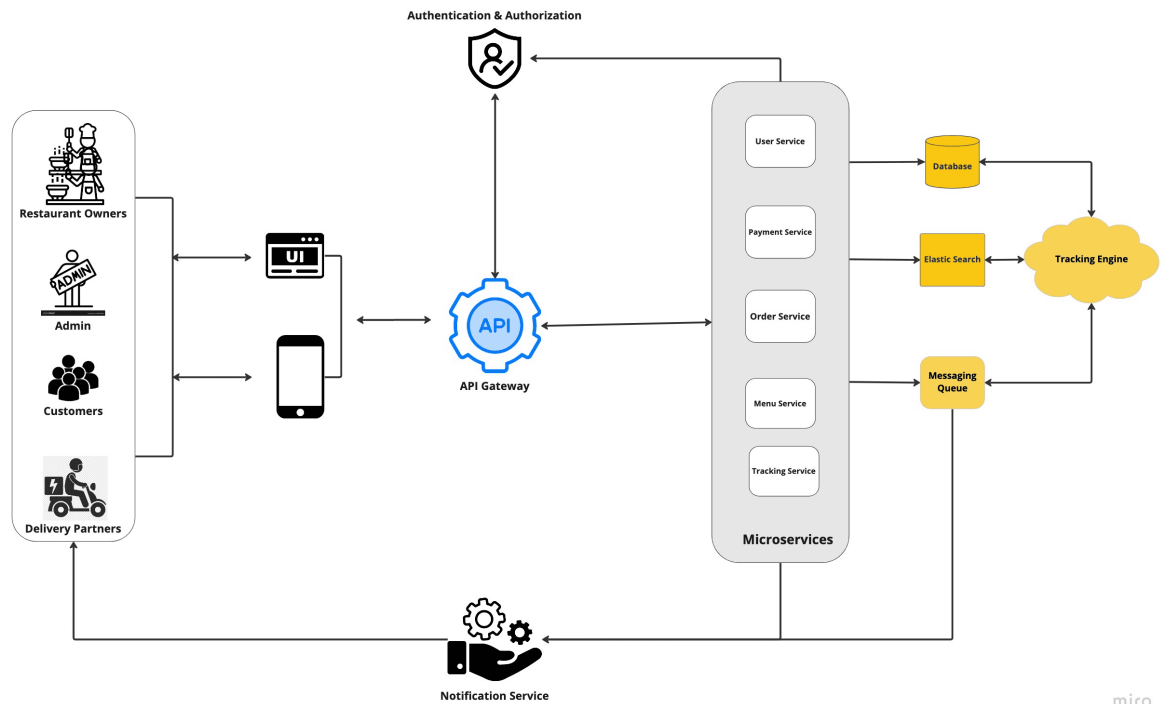
PROJECT ARCHITECTURE

3.1 Architecture



The above diagram depicts the actual requirements for an Online Food Delivery system. It comprises of:

- **Admin Panel:** Responsible for on boarding of Restaurants Owners and Delivery Partners.
- **Restaurant Owners:** Responsible for adding menus and managing orders and payments.
- **Delivery Partners:** Responsible for picking an order from the *Restaurant Owners* and delivering them to the customers.
- **Customers:** They are the actual client. They will be consuming the application. The customer will make an order from the system.



Here's a architecture for the project:

- **User Interfaces (UIs):**

1. Customer App: Interface for browsing restaurants, placing orders, tracking deliveries, and managing accounts.
2. Restaurant App: Interface for managing menus, receiving orders, tracking deliveries, and communication with drivers.
3. Driver App: Interface for accepting deliveries, navigating to locations, and managing communication with customers and restaurants.
4. Admin Panel: Web interface for managing the platform, including managing restaurants, drivers, promotions, analytics, and financials.

- **Business Logic:**

1. Order Management: Processes customer orders, assigns them to restaurants, and facilitates communication between parties.
2. Delivery Management: Tracks driver location, optimizes routes, and assigns deliveries.
3. Payment Processing: Handles secure transactions between customers, restaurants, and the platform.

- **Data Management:**

1. User Database: Stores user information, preferences, and order history.
2. Restaurant Database: Stores restaurant information, menus, locations, and ratings.
3. Driver Database: Stores driver information, location data, performance metrics, and availability.
4. Order Database: Stores order details, status, and communication logs.

- **External Integrations:**

1. Mapping Services (e.g., Google Maps): Provides location data and route optimization.
2. Payment Gateways (e.g., Stripe, PayPal): Enables secure online transactions.
3. SMS/Push Notification Services: Facilitates communication between users, restaurants, and drivers.

Analysis Techniques:

- **Value Stream Mapping:** Identify the key activities involved in processing an order and delivering food, highlighting potential bottlenecks and opportunities for improvement.
- **Business Process Modeling:** Document the workflows for different user types (customer, restaurant, driver) to understand how they interact with the system.
- **Stakeholder Analysis:** Identify key stakeholders (customers, restaurants, drivers, platform) and their needs to ensure the business model caters to all parties.

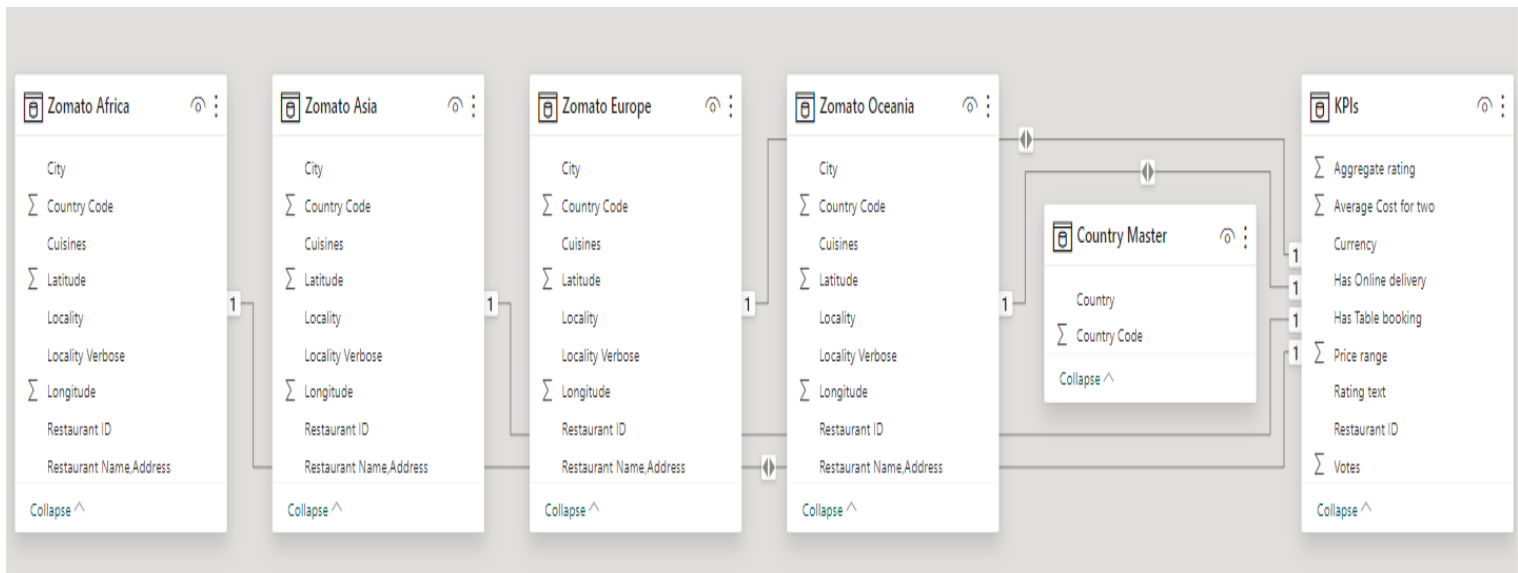
By understanding this business architecture, you can effectively analysis online delivery apps and identify areas for improvement in efficiency, user experience, and overall value proposition.

CHAPTER 4

MODELING AND RESULT

Manage relationship:

The “KPIs” file will be used as the main character as it contains most key identifier (Zomato Asia, Zomato Oceania, Zomato Europe, Zomato Africa) which can be use to relates the 6 data files together. The “country master” file is use to link the client profile geographically with “country code”.



Manage relationships

Active	From: Table (Column)	To: Table (Column)
<input checked="" type="checkbox"/>	Zomato Africa (Restaurant ID)	KPIs (Restaurant ID)
<input checked="" type="checkbox"/>	Zomato Asia (Restaurant ID)	KPIs (Restaurant ID)
<input checked="" type="checkbox"/>	Zomato Europe (Restaurant ID)	KPIs (Restaurant ID)
<input checked="" type="checkbox"/>	Zomato Oceania (Restaurant ID)	KPIs (Restaurant ID)

New... Autodetect... Edit... Delete

Close

Edit relationship

Select tables and columns that are related.

Zomato Africa

Restaurant ID	Country Code	City	Restaurant Name,Address	Locality
18395463	189	Cape Town	The Butcher's Wife,15 Belgravia Road, Athlone, Cape T...	Athlone
18337845	189	Cape Town	Coco Safar,Ground Floor, Cavendish Square, Claremont...	Cavendish Square, C
6401732	189	Cape Town	La Parada,107 Bree Street, CBD, Cape Town	CBD

KPIs

Restaurant ID	Average Cost for two	Currency	Has Table booking	Has Online delivery	Price range
18433852	300	Indian Rupees(Rs.)	No	No	1
18465871	300	Indian Rupees(Rs.)	No	No	1
18471268	300	Indian Rupees(Rs.)	No	No	1

Cardinality

Cross filter direction

One to one (1:1)

Both

☒ Make this relationship active

☐ Assume referential integrity

OK

Cancel

Modelling for the data:

The screenshot shows the Power Query Editor interface. At the top, the formula bar contains the M code: `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}})`. Below the formula bar is a table with the following data:

	Restaurant ID	Country Code	City	Restaurant Name,Address
1	6900714	215	Birmingham	Pepe's Piri Piri,254-256 Alum Rock Ro
2	6900883	215	Birmingham	Ju Ju's Cafe,1 Canal Square, Brindley
3	6900374	215	Birmingham	Bank,4 Brindleyplace, Brindleyplace, B
4	6900224	215	Birmingham	Chaophraya,Middle Mall, Bullring Shc
5	6900160	215	Birmingham	Handmade Burger Co.,Unit 3, St Mart
6	6900050	215	Birmingham	Jamie's Italian,Middle Mall, Bullring S
7	6900724	215	Birmingham	Bodega,12 Bennetts Hill, City Centre,
8	6901081	215	Birmingham	San Carlo,4 Temple Street, City Cent
9	6900674	215	Birmingham	Purnell's,55 Cornwall Street, Colmore
10	6901062	215	Birmingham	The Warehouse Cafe,54-57 Allison Str
11	6900669	215	Birmingham	Fiesta del Asado,229 Hagley Road, Ed

On the right, the Query Settings pane shows the query name "Zomato Europe" and a list of applied steps: Source, Navigation, Promoted Headers, and Changed Type (which is currently selected).

Replacing the values:

Set some fields to English for easy understanding, we replace the values to English with the Power Query Editor.

The screenshot shows the Power Query Editor interface with the "Replace Values" dialog box open. The dialog box has the following fields:

- Value To Find:** London
- Replace With:** France
- Advanced options:** (collapsed)

The dialog box also has "OK" and "Cancel" buttons. In the background, the Query Settings pane is visible, showing the same list of applied steps as in the previous screenshot, with "Filtered Rows" now at the bottom of the list.

To replace the values "London" with "France" in a sentence

Power Query Editor interface showing a query named "Zomato Europe". The formula bar displays the step: `= Table.ReplaceValue(#"Filtered Rows", "London", "France", Replacer.ReplaceText, ...)`. The data table has columns: Country Code, City, and Restaurant Name,Address. The right-hand pane shows the "Query Settings" for "Zomato Europe", listing applied steps: Navigation, Promoted Headers, Changed Type, Filtered Rows, and Replaced Value.

Changing the order of Town name at Power Query
Duplicate the “City/Town” then split column using space as delimiter

Power Query Editor interface showing the "Zomato Europe" query. The formula bar displays the step: `= Table.AddColumn(#"Removed Columns", "Town", each [City])`. The data table now includes a "Town" column. The right-hand pane shows the "Query Settings" for "Zomato Europe", listing applied steps: Source, Navigation, Promoted Headers, Changed Type, Filtered Rows, Replaced Value, and Renamed Columns.

Then merge the Column by City and Locality. Refer to applied steps for details.

Power Query Editor interface showing the "Zomato Europe" query. The formula bar displays the step: `= Table.AddColumn(#"Removed Columns", "Cuisines", each [Cuisines])`. The data table now includes a "Cuisines" column. The right-hand pane shows the "Query Settings" for "Zomato Europe", listing applied steps: Source, Navigation, Promoted Headers, Changed Type, Added Custom, Removed Columns, and Added Custom?

Dashboard:



CONCLUSION

The project “360 degree business analysis of online delivery apps” using PowerBI has successfully demonstrated the potential of data analytics in the delivery through online apps. The business analysis of online delivery apps transformed the way consumers good service and convince never before. The interactive dashboard and reports have offered a comprehensive view of fact about delivery, ratings and scores .The project has also highlighted the importance of data visualization in making complex data more understandable and accessible. The use of PowerBI has made it possible to present data in a visually appealing and easy-to-understand format, thereby aiding in better decision-making. By adapting to evolving consumer preferences and leveraging emerging technology, online delivery apps can secure their position as indispensable components of modern commerce.

FUTURE SCOPE

Business analysis will focus on enhancing the overall customer experience by leveraging data insights to streamline ordering processes, improve delivery accuracy, and offer personalized recommendations. Technologies such as chatbots and virtual assistants will further enhance customer interactions and support services. The landscape of online delivery apps is dynamic and competitive, requiring continuous innovation and adaptation. With the growing emphasis on data privacy and security, business analysis for online delivery apps will prioritize compliance with regulatory requirements such as GDPR and CCPA. Blockchain technology can enhance transparency and traceability in supply chains, while IoT devices can provide real-time tracking of deliveries and inventory.

REFERENCE

<https://pratapsharma.com.np/architecture-of-food-delivery-app>

LINKS