Tech Saksham

Case Study Report

Data Analytics with Power BI

360 Degree Business Analysis of online Delivery Apps using Power BI

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ABSTRACT

This study presents a comprehensive analysis of online delivery apps utilizing Power BI, a powerful business intelligence tool. The analysis encompasses various dimensions of the business, including customer behavior, sales performance, operational efficiency, inventory management, marketing effectiveness, customer feedback, and financial insights. Through data integration and visualization techniques, Power BI facilitates the exploration of key metrics, trends, and patterns, enabling businesses to make informed decisions to enhance operational efficiency, optimize resource allocation, improve customer satisfaction, and drive growth. This research highlights the importance of leveraging advanced analytics tools like Power BI for a holistic understanding of online delivery app businesses in today's competitive market landscape.

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CHAPTER 1

INTRODUCTION

1.1 Problem Statement

Online delivery apps have witnessed exponential growth in recent years, fueled by the convenience they offer to consumers. However, the success of these platforms relies heavily on understanding various aspects of the business, ranging from customer preferences to operational efficiency. Traditional methods of analysis often fall short in providing a holistic view of the business, leading to missed opportunities and inefficiencies. Therefore, there is a pressing need for a comprehensive 360-degree business analysis approach that leverages advanced analytics tools like Power BI to unlock actionable insights from diverse datasets. This study aims to address this gap by conducting an in-depth analysis of online delivery apps using Power BI, with a focus on optimizing operations, enhancing customer satisfaction, and driving sustainable growth in a competitive market landscape..

1.2 Proposed Solution

To address the challenges faced by online delivery apps and unlock their full potential, a comprehensive 360-degree business analysis approach utilizing Power BI is proposed. This solution encompasses several key steps:

1. **Data Integration and Cleansing**:
   - Gather data from various sources including transactional databases, customer feedback platforms, marketing channels, and operational logs.
   - Integrate and clean the data to ensure consistency and accuracy, preparing it for analysis.
2. **Dashboard Development**:
   - Develop interactive dashboards in Power BI to visualize key metrics and KPIs across different aspects of the business.
   - Customize dashboards to provide insights tailored to specific stakeholders, such as executives, marketing teams, and operations managers.
3. **Customer Analysis**:
   - Utilize Power BI to analyze customer demographics, preferences, and behavior.
   - Segment customers based on their ordering patterns, frequency, and lifetime value to tailor marketing strategies and improve retention.

4. **Sales Performance Monitoring**:
    - Develop dashboards to monitor sales trends, revenue growth, and product performance over time.
    - Utilize forecasting models in Power BI to predict future sales and identify opportunities for growth.
5. **Operational Efficiency Optimization**:
    - Analyze operational metrics such as order fulfillment time, delivery success rate, and driver performance.
    - Optimize delivery routes using geospatial analytics in Power BI to improve efficiency and reduce costs.
6. **Inventory Management**:
    - Develop dashboards to track inventory levels, stockouts, and replenishment cycles.
    - Utilize predictive analytics models to forecast demand and optimize inventory levels, minimizing carrying costs while ensuring product availability.
7. **Marketing Effectiveness Evaluation**:
    - Analyze the effectiveness of marketing campaigns and promotions using attribution modeling and ROI analysis in Power BI.
    - Monitor customer acquisition cost (CAC) and retention rate to evaluate the overall effectiveness of marketing efforts.
8. **Customer Feedback Analysis**:
    - Integrate data from customer feedback platforms and social media channels to analyze sentiment and identify areas for improvement.
    - Utilize natural language processing (NLP) capabilities in Power BI to perform sentiment analysis on customer reviews and comments.
9. **Financial Analysis**:
    - Develop dashboards to track financial metrics such as revenue, profit margins, and operating expenses.
    - Utilize Power BI's financial modeling capabilities to perform scenario analysis and support budgeting and financial planning processes.

By implementing this comprehensive solution, online delivery apps can gain actionable insights to optimize operations, enhance customer satisfaction, and drive sustainable growth in a competitive market landscape.

1.3 Feature

1. Data Integration: Easily connect and integrate data from various sources such as transactional databases, Excel files, and CSV files.

2. Interactive Dashboards: Create user-friendly dashboards with interactive visualizations like charts and graphs to represent key metrics such as sales trends, order volume, and customer demographics.

3. Drag-and-Drop Interface: Allow users to build reports and dashboards using a simple drag-and-drop interface, making it easy to customize and analyze data without needing extensive technical skills.

4. Filtering and Slicing: Enable users to filter and slice data dynamically to focus on specific time periods, regions, or product categories, providing deeper insights into performance metrics.

5. Export and Sharing: Allow users to export reports and dashboards to commonly used formats like PDF or Excel, and easily share them with stakeholders via email or link sharing.

6. Scheduled Refresh: Automate data refreshes on a scheduled basis to ensure that reports and dashboards always reflect the most up-to-date information.

7. Mobile Access: Provide mobile-friendly dashboards that can be accessed and viewed on smartphones and tablets, allowing users to stay informed on the go.
8. Basic Calculations: Include basic calculation functionalities like sum
, average, and count to perform simple analyses directly within Power BI.

9. Customizable Themes: Offer pre-built themes and the ability to customize colors, fonts, and layouts to match the branding or preferences of the organization.

10. User Permissions: Implement basic user permissions to control access to reports and data based on roles within the organization, ensuring data security and confidentiality.

These simple features of Power BI can enable businesses to conduct a basic yet effective 360 Degree Business Analysis of their online delivery apps, providing valuable insights to support decision-making and drive business growth.

1.4 Advantages

Analyzing online delivery apps using a 360-degree approach with Power BI offers several advantages in optimizing operations, enhancing customer satisfaction, and driving sustainable growth:

1. **Integrated Data Analysis**: Power BI enables the integration of diverse datasets, including transactional data, customer feedback, delivery performance metrics, and market trends. This integrated approach provides a comprehensive view of the business, allowing for a deeper understanding of various aspects impacting operations and customer experience.

2. **Real-Time Insights**: With Power BI's real-time data processing capabilities, businesses can access up-to-date insights into key performance indicators (KPIs) such as order volume, delivery times, and customer feedback. This real-time visibility allows for proactive decision-making and quick responses to changing market dynamics, ensuring efficient operations and improved service quality.

3. **Predictive Analytics**: By leveraging Power BI's advanced analytics capabilities, businesses can conduct predictive analysis to forecast demand, identify emerging trends, and anticipate customer behavior. This enables proactive planning and resource allocation, minimizing delivery delays, optimizing inventory management, and enhancing overall operational efficiency.

4. **Personalized Customer Experience**: Power BI facilitates the analysis of customer data, including ordering patterns, preferences, and feedback. By gaining insights into customer behavior, businesses can personalize the delivery experience, recommend relevant products, and tailor marketing efforts to individual preferences, thereby enhancing customer satisfaction and loyalty.

5. **Operational Efficiency**: Power BI provides detailed insights into various operational aspects such as delivery routes, driver performance, and inventory management. By analyzing these factors, businesses can identify inefficiencies, streamline processes, and optimize resource allocation, leading to cost savings and improved operational efficiency.

6. **Market Intelligence**: Power BI enables businesses to analyze market trends, competitor performance, and consumer behavior. By gaining a deeper understanding of the competitive landscape, businesses can identify opportunities for differentiation, develop targeted marketing strategies, and stay ahead of evolving consumer preferences, thereby driving sustainable growth in a competitive market environment.

7. **Data-Driven Decision Making**: Power BI empowers businesses to make informed decisions based on data-driven insights rather than relying on intuition or guesswork. By providing visualizations and interactive dashboards, Power BI makes complex data accessible and understandable, enabling stakeholders to identify trends, patterns, and opportunities for optimization, leading to more effective decision-making and strategic planning.

8. **Scalability and Flexibility**: Power BI is scalable and adaptable to the evolving needs of businesses, regardless of size or complexity. Whether analyzing data for a single location or multiple regions, Power BI can accommodate varying datasets and reporting requirements, providing flexibility and scalability to support business growth and expansion.

In conclusion, leveraging Power BI for a comprehensive 360-degree analysis of online delivery apps enables businesses to optimize operations, enhance customer satisfaction, and drive sustainable growth in a competitive market landscape. By integrating diverse datasets, conducting real-time analysis, and leveraging advanced analytics capabilities, Power BI empowers businesses to unlock actionable insights and make informed decisions that drive success in the digital delivery ecosystem.

1.5 Scope

The scope of conducting an in-depth analysis of online delivery apps using Power BI with a focus on optimizing operations, enhancing customer satisfaction, and driving sustainable growth is vast and encompasses several key areas:

1. **Customer Preferences and Behavior Analysis**: Understanding customer preferences, ordering patterns, and behavior is essential for tailoring services and offerings to meet their needs effectively. Analyzing data related to customer demographics, order history, product preferences, and feedback can provide valuable insights into customer preferences and help in developing targeted marketing strategies.

2. **Operational Efficiency Optimization**: Analyzing operational data such as delivery routes, driver performance, order processing times, and inventory management can help identify bottlenecks and inefficiencies in the delivery process. By optimizing operations, businesses can reduce costs, improve delivery times, and enhance overall efficiency.

3. **Market Trends and Competition Analysis**: Monitoring market trends and analyzing competitor performance is essential for staying competitive in the online delivery industry. By analyzing market data, consumer trends, competitor offerings, and pricing strategies, businesses can identify opportunities for differentiation, market expansion, and strategic partnerships.

4. **Customer Satisfaction and Loyalty Management**: Improving customer satisfaction and loyalty is key to retaining customers and fostering long-term relationships. Analyzing customer feedback, ratings, and reviews can help identify areas for improvement and implement strategies to enhance the overall customer experience.

project contributes to the broader goal of digital transformation in the banking sector, promoting efficiency, innovation, and customer-centricity.

CHAPTER 2

SERVICES AND TOOLS REQUIRED

2.1 Services Used

1. **Data Governance and Security**: Implementing measures to ensure data quality, integrity, and security throughout the analysis process, adhering to regulatory compliance standards such as GDPR, CCPA, etc.

2. **Training and Support**: Providing training sessions and ongoing support to enable users to effectively utilize Power BI for business analysis and decision-making.

3. **Custom Development Services**: Building custom data connectors, DAX functions, and Power BI extensions to extend the capabilities of Power BI and meet specific business requirements.

4. **Performance Optimization**: Optimizing the performance of Power BI reports and dashboards for efficient data retrieval, processing, and visualization.

5. **Deployment and Maintenance**: Deploying Power BI solutions to production environments and providing ongoing maintenance and support services to ensure smooth operation and scalability.

These services can be provided by specialized consulting firms, data analytics agencies, or in-house teams with expertise in Power BI, data analysis, and business intelligence.

2.2 Tools and Software used

Tools:

Identify and connect relevant data sources to Power BI Desktop. For online delivery apps, these could include:

- Transactional data (orders, payments, deliveries)
- Customer data (demographics, preferences, feedback)
- Operational data (delivery times, order processing)
- Inventory data (stock levels, replenishment rates)
- Marketing data (campaign performance, customer acquisition)
- Financial data (revenue, expenses, profitability)

Software:

To perform a 360-degree business analysis of online delivery apps using Power BI, you would primarily rely on Power BI itself as the software tool. Power BI

provides a comprehensive suite of features for data visualization, analytics, and business intelligence.

Software Requirements:

To conduct a 360-degree business analysis of online delivery apps using Power BI, you'll need a combination of software tools and technologies. Here's a breakdown of the software requirements:

1. **Power BI Desktop**: This is the primary software tool for creating reports and dashboards. It allows you to connect to data sources, transform data, and design visualizations.

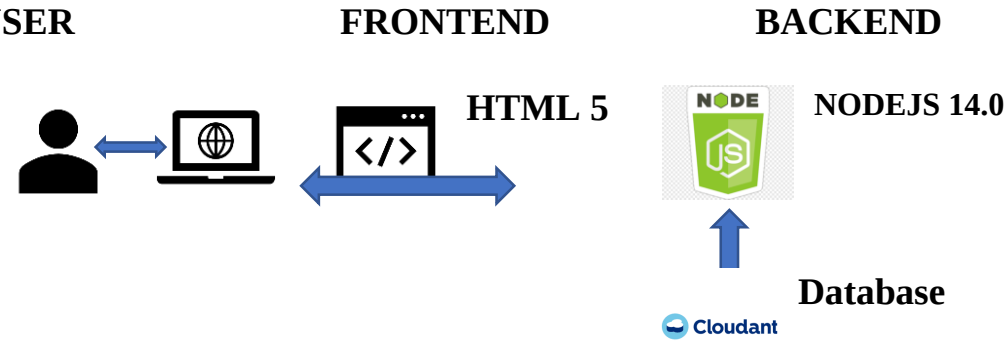
2. **Database Management Systems (DBMS)**: Depending on where your data resides, you may need access to a database management system such as Microsoft SQL Server, MySQL, PostgreSQL, or others. This is particularly relevant if you're dealing with large datasets or need to perform complex queries.

3. **Web APIs** : If you need to integrate data from external sources such as social media platforms or third-party analytics services, you may require access to relevant APIs and authentication credentials.

CHAPTER 3

PROJECT ARCHITECTURE

3.1 Architecture



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

Creating a project architecture for a 360-degree business analysis of online delivery apps using Power BI involves structuring your analysis process, defining data flows, and outlining the components of your solution. Here's a suggested architecture for such a project:

1. **Data Sources**:
   - Identify and gather data from various sources relevant to online delivery apps. This may include transactional databases, customer feedback systems, marketing platforms, financial systems, and more.
   - Ensure data quality and consistency across sources through data cleansing and validation processes.

2. **Data Integration**:
   - Use ETL (Extract, Transform, Load) processes to integrate data from different sources into a centralized data repository.
   - Transform data as needed to ensure consistency and compatibility for analysis in Power BI.

3. **Data Warehouse or Data Lake** :
   - Optionally, store integrated data in a data warehouse or data lake for centralized storage and easy access.
   - Data warehousing solutions like Microsoft Azure SQL Data Warehouse or Amazon Redshift can be utilized for this purpose.

4. **Power BI Desktop**:
   - Develop Power BI reports and dashboards in Power BI Desktop.
   - Connect Power BI Desktop to your integrated data sources or data warehouse.

5. **Data Modeling**:
   - Design and implement a data model in Power BI Desktop to establish relationships between different data entities.
   - Create calculated columns, measures, and KPIs using DAX (Data Analysis Expressions).

6. **Visualization**:
   - Design interactive and informative visualizations in Power BI to present key metrics, trends, and insights.
   - Utilize various chart types, graphs, maps, and tables to effectively communicate data findings.

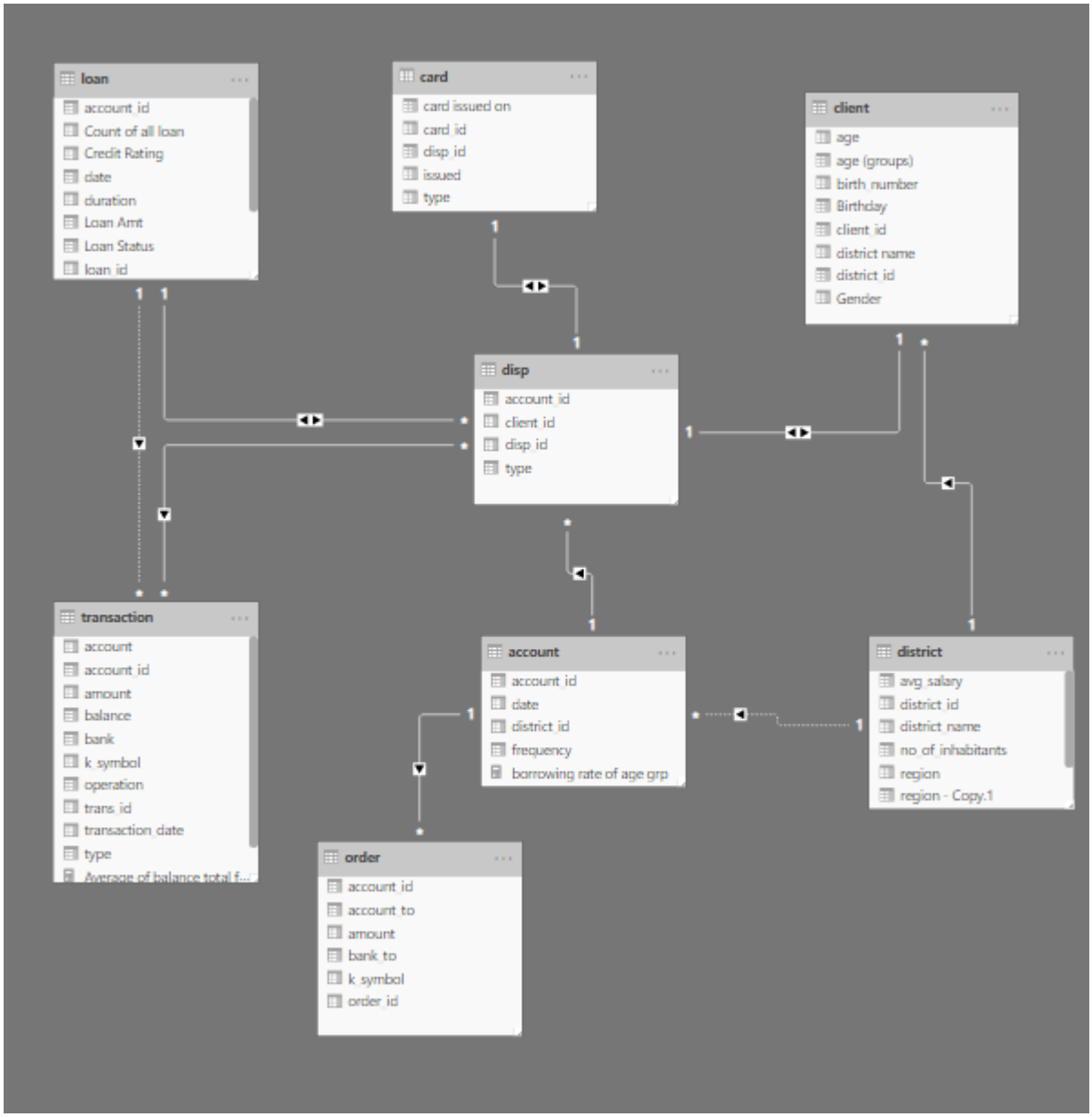
7. **Dashboards**:
    - Build comprehensive dashboards in Power BI to provide stakeholders with an overview of online delivery app performance.
    - Include multiple reports, KPIs, and filters for interactive exploration.
8. **Power BI Service**:
    - Publish Power BI reports and dashboards to the Power BI Service for sharing and collaboration.
    - Configure data refresh schedules to keep reports up-to-date with the latest data.
9. **Security and Access Control**:
    - Implement security measures to ensure data confidentiality and integrity.
    - Configure role-based access control (RBAC) in Power BI to manage user permissions and access levels.
10. **Monitoring and Optimization**:
    - Monitor usage and performance of Power BI reports and dashboards.
    - Optimize data refresh schedules, report designs, and data models for improved efficiency.

CHAPTER 4

MODELING AND RESULT

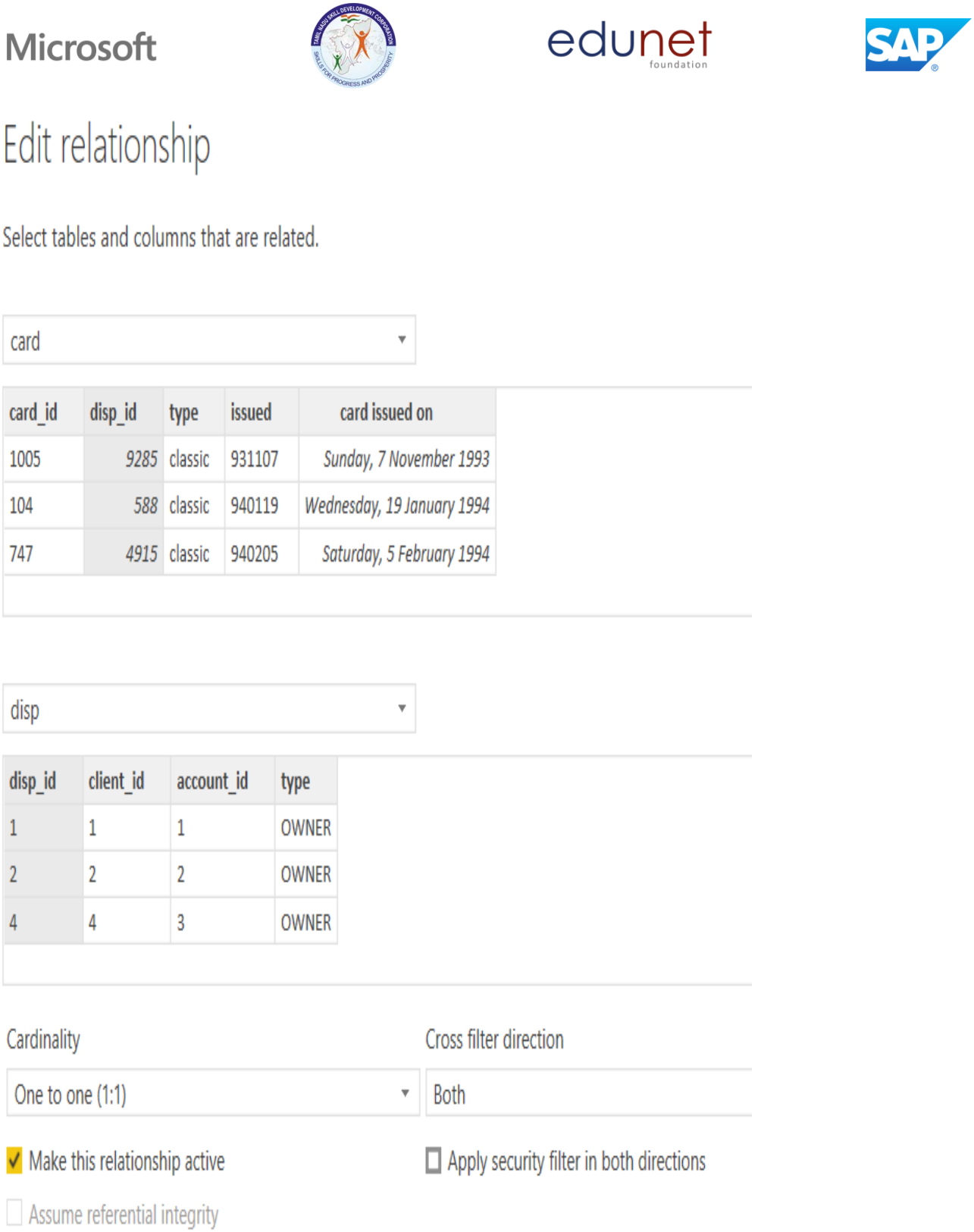
Manage relationship

The “disp” file will be used as the main connector as it contains most key identifier (account id, client id and disp id) which can be use to relates the 8 data files together. The “district” file is use to link the client profile geographically with “district id”



Manage relationships

Active	From: Table (Column)	To: Table (Column)
☑	card (disp_id)	disp (disp_id)
☑	client (district_id)	district (district_id)
☑	disp (account_id)	account (account_id)
☑	disp (account_id)	loan (account_id)
☑	disp (client_id)	client (client_id)
☑	order (account_id)	account (account_id)
☑	transaction (account_id)	disp (account_id)
☐	account (district_id)	district (district_id)
☐	transaction (account_id)	loan (account_id)



Modelling for Gender and Age data

Notice that the Gender and age of the client are missing from the data. These can be formulated from the birth number YYMMDD where at months (the 3rd

and 4th digits) greater than 50 means that client is a Female. We can create a column for Gender.

```
1  Gender =
2  VAR stringDate = FORMAT(client[birth_number],"General Number")
3  VAR month = VALUE(MID(stringDate,3,2))
4  RETURN IF(month > 50,"F","M")
5
```

client_id	birth_number	district_id	Gender	Birthday	age
3428	875927	42	F	27/09/1987	13
4354	860813	28	M	13/08/1986	14
3417	855318	35	F	18/03/1985	15
10201	851019	13	M	19/10/1985	15
734	855114	46	F	14/01/1985	15

For birthday, we need to reduce the birth month of the female by 50 and then change the date format to DD/MM/YYYY adding 1900 to the year.

```
1  Birthday =
2  VAR stringDate = FORMAT(client[birth_number],"General Number")
3  VAR stringMonth = VALUE(MID(stringDate,3,2))
4  VAR mth = IF(stringMonth > 50, stringMonth - 50,stringMonth)
5  VAR year = VALUE(MID(stringDate,1,2))
6  VAR day = VALUE(MID(stringDate,5,2))
7  RETURN FORMAT(DATE(year+1900,mth,day),"DD/MM/YYYY")
```

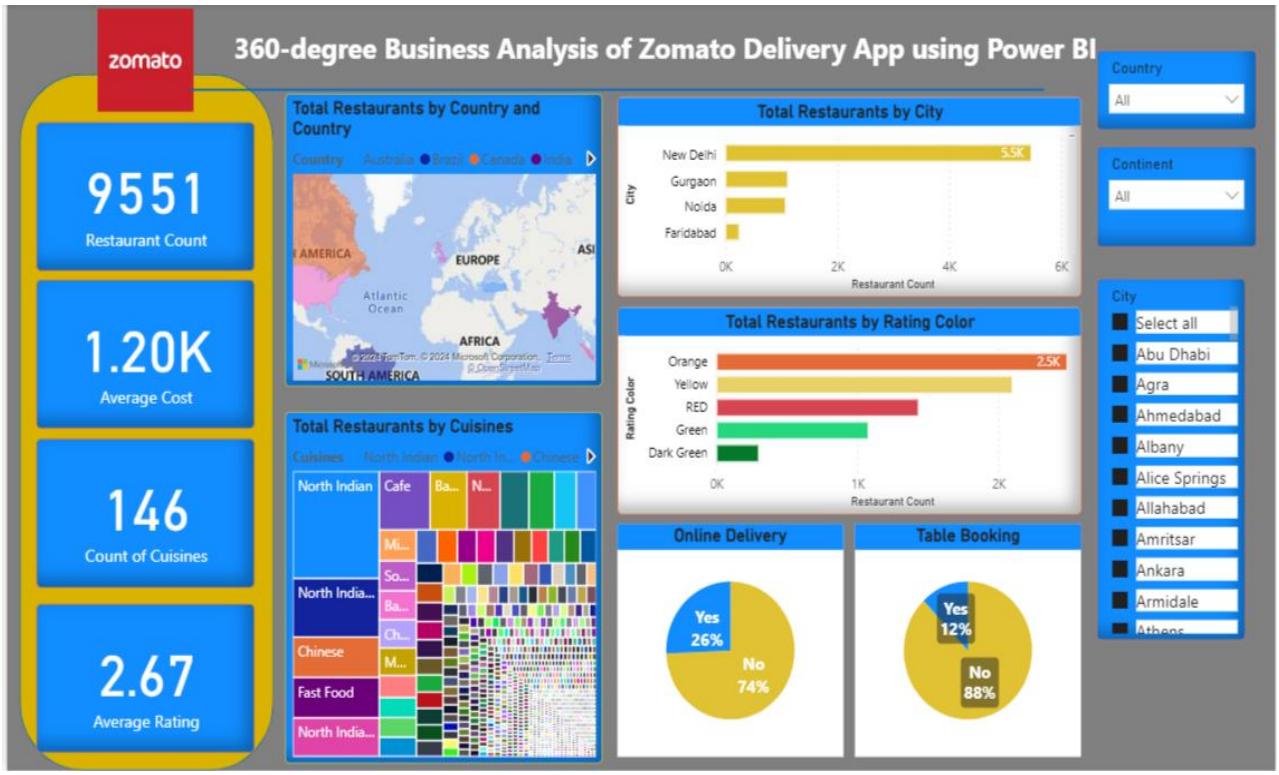
client_id	birth_number	district_id	Gender	Birthday	age
3428	875927	42	F	27/09/1987	13
4354	860813	28	M	13/08/1986	14
3417	855318	35	F	18/03/1985	15
10201	851019	13	M	19/10/1985	15

For Age, we shall assume it is year 1999 as explain previously and use it to minus from the birth year.

```
1  age = 1999 -RIGHT(client[Birthday],4)
```

client_id	birth_number	district_id	Gender	Birthday	age	age (groups)
2	450204	1	M	04/02/1945	54	36 -54 Baby Boomers

Dashboard



CONCLUSION

The project “Real-Time Analysis of Bank Customers” using PowerBI has successfully demonstrated the potential of data analytics in the banking sector. The real-time analysis of customer data has provided valuable insights into customer behavior, preferences, and trends, thereby facilitating informed decision-making. The interactive dashboards and reports have offered a comprehensive view of customer data, enabling the identification of patterns and correlations. This has not only improved the efficiency of data analysis but also enhanced the bank’s ability to provide personalized services to its customers. 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.

FUTURE SCOPE

The future scope of this project is vast. With the advent of advanced analytics and machine learning, PowerBI can be leveraged to predict future trends based on historical data. Integrating these predictive analytics into the project could enable the bank to anticipate customer needs and proactively offer solutions. Furthermore, PowerBI’s capability to integrate with various data sources opens up the possibility of incorporating more diverse datasets for a more holistic view of customers. As data privacy and security become increasingly important, future iterations of this project should focus on implementing robust data governance strategies. This would ensure the secure handling of sensitive customer data while complying with data protection regulations. Additionally, the project could explore the integration of real-time data streams to provide even more timely and relevant insights. This could potentially transform the way banks interact with their customers, leading to improved customer satisfaction and loyalty.

