



Tech Saksham

Case Study Report

Data Analytics with Power BI

“360-degree Business Analysis Of Online Delivery App”

GOVERNMENT ARTS COLLEGE FOR WOMEN, KRISHNAGIRI

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ABSTRACT

The aim of this study was to studying in the level of delivery satisfaction (DS), the effect of personal factors and service quality (SQ) on delivery satisfaction in online shopping with the empirical data. The quantitative research was used in this study by survey research that was used collect sample data from 92 Ramkhamhaeng University lecturers. The data analyses were conducted by t-Test, One Way ANOVA and Multiple Regression Analysis (MRA). The results showed that Ramkhamhaeng University lecturers have highest satisfaction. And most of personal factors and service quality factors have effect on delivery satisfaction. Moreover, the results found that the 3 factors of service quality such as tangibles factor, assurance factor and empathy factor have effect on satisfaction (Sig.=0.05) except for the reliability factor and responsiveness factor have not effect on delivery satisfaction



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CHAPTER 1

INTRODUCTION

Problem Statement:

The problem statement for the 360-degree business analysis of the online delivery app using Power BI could be:

"Despite experiencing steady growth in user base and order volume, the online delivery app is facing challenges in optimizing operational efficiency, enhancing customer satisfaction, and maximizing revenue generation. There is a need to conduct a comprehensive business analysis to identify areas of improvement and capitalize on opportunities for growth. The analysis will involve examining key metrics such as order volume, revenue, delivery performance, customer demographics, and feedback. The goal is to leverage insights from the analysis to make data-driven decisions and drive strategic initiatives that will enhance the app's competitiveness and profitability in the market."

Proposed Solution

1. ***Data Collection***: Gather data from various sources such as customer orders, delivery times, customer feedback, ratings, etc. This can be done by extracting data from databases, APIs, or flat files.



2. ***Data Cleaning and Preparation***: Cleanse the data by removing duplicates, handling missing values, and ensuring consistency. Prepare the data for analysis by structuring it in a format suitable for Power BI.

3. ***Data Modeling***: Create a data model in Power BI by defining relationships between different tables, such as orders, customers, products, and deliveries. This step is crucial for accurate analysis and visualization.

4. ***Analysis***: Use Power BI's features to analyze various aspects of online delivery apps, including:

1. - Order trends over time: Analyze patterns in order volume, peak hours, and seasonal variations.
2. - Customer segmentation: Segment customers based on demographics, order frequency, order value, etc.
3. - Delivery performance: Assess delivery times, delays, and factors affecting delivery efficiency.
4. - Product performance: Identify top-selling products, popular categories, and trends in product preferences.
5. - Customer satisfaction: Analyze customer feedback, ratings, and complaints to gauge overall satisfaction levels.
6. - Operational efficiency: Evaluate key performance indicators (KPIs) such as order fulfillment rate, delivery accuracy, and driver utilization.

7. ***Visualization***: Create interactive dashboards and reports in Power BI to visually represent the analysis findings. Use charts, graphs, maps, and slicers to provide insights that are easy to understand and navigate.

8. ***Insights and Recommendations***: Based on the analysis, derive actionable insights and recommendations for improving the online delivery



app's performance, customer experience, and operational efficiency.

9. ***Iterative Refinement***: Continuously refine the analysis based on feedback and new data to ensure the insights remain relevant and actionable over time



10. Accessibility Enhancements: Develop alternative ordering options such as phone-based ordering systems or partnerships with community organizations to reach consumers without access to smartphones or internet connectivity.

By implementing these proposed solutions, the online delivery app can enhance its value proposition, differentiate itself from competitors, and deliver a superior experience for both businesses and consumers, ultimately driving growth and success in the market.

Feature

1. ***Sales Performance Analysis***: Track sales metrics such as revenue, orders processed, and average order value over time to identify trends and patterns.
2. ***Customer Segmentation***: Segment customers based on demographics, behavior, or purchase history to tailor marketing strategies and improve customer satisfaction.
3. ***Product Performance***: Analyze the performance of different products or categories to optimize inventory management and marketing efforts.
4. ***Delivery Performance***: Monitor delivery times, customer satisfaction scores, and delivery route efficiency to enhance service quality and reduce costs.
5. ***Operational Efficiency***: Evaluate key operational metrics such as order processing time, driver utilization, and order accuracy to identify bottlenecks and areas for improvement.
6. ***Market Basket Analysis***: Identify associations between products frequently purchased together to optimize product recommendations and cross-selling strategies.
7. ***Customer Feedback Analysis***: Analyze customer reviews and feedback to understand sentiment, identify recurring issues, and take corrective actions.
8. ***Geospatial Analysis***: Visualize customer locations, delivery routes, and service



coverage areas to optimize delivery logistics and expand market reach.

9. ***Financial Performance***: Track financial metrics such as gross margin, operating expenses, and profitability by region or product category to make data-driven business decisions.

10. ***Predictive Analytics***: Utilize predictive models to forecast demand, predict customer churn, and anticipate market trends to stay ahead of the competition.



IMPLEMENTATION:

1. ***Data Collection***: Gather data from various sources such as sales transactions, customer reviews, delivery times, user interactions, etc. Ensure data integrity and quality.
2. ***Data Integration***: Integrate the collected data into a unified dataset suitable for analysis. Use Power BI's data modeling capabilities to create relationships between different data tables.
3. ***Data Transformation***: Cleanse and transform the data as necessary. This may involve handling missing values, standardizing formats, and creating calculated columns or measures for analysis.
4. ***Dashboard Design***: Design interactive dashboards in Power BI to visualize key metrics and insights. Include visualizations such as line charts, bar charts, maps, and KPI cards to represent different aspects of the online delivery app performance.
5. ***Customer Analysis***: Analyze customer behavior, preferences, and demographics. Use Power BI's analytical tools to segment customers based on their order history, frequency of orders, average order value, etc.
6. ***Product Analysis***: Evaluate the performance of different products or menu items offered by the online delivery app. Identify popular items, seasonal trends, and underperforming products.
7. ***Operational Analysis***: Assess the operational efficiency of the delivery process. Analyze delivery times, order fulfillment rates, driver performance, and customer satisfaction scores.
8. ***Market Analysis***: Conduct competitive analysis by comparing the online delivery app's performance with competitors. Evaluate market share, pricing strategies, and customer sentiment towards competitors.
9. ***Predictive Analytics***: Implement predictive analytics models using Power BI to forecast future trends such as demand for certain products, expected sales revenue, or



customer churn rates.

10. ***Feedback Analysis***: Analyze customer feedback and reviews to identify areas for improvement. Use sentiment analysis to categorize feedback as positive, negative,



Scope

The scope of the online delivery app encompasses various aspects that contribute to its functionality, reach, and impact within the market. Here's a breakdown of the scope:

1. categories*Sales and Revenue Analysis:* Track sales performance, revenue trends, and profitability metrics across different time periods, regions, and product s.

2.customer Behavior Analysis:* Understand customer preferences, purchasing patterns, demographics, and satisfaction levels through data visualization and analytics.

3. *Operational Efficiency:* Monitor delivery times, order processing, and operational metrics to optimize efficiency and identify bottlenecks in the delivery process.

4. *Supply Chain Management:* Analyze inventory levels, supplier performance, and procurement to competition analysis.



5. Logistics and Delivery Network: The scope encompasses the setup and management of a robust logistics and delivery network. This includes recruiting and training delivery personnel, optimizing delivery routes, managing inventory, and ensuring timely and efficient order fulfillment.

6. Marketing and Promotion: The scope includes developing marketing strategies to promote the app and attract both consumers and businesses. This may involve online advertising, social media marketing, partnerships with influencers, promotional campaigns, and loyalty programs.

7. Regulatory Compliance: The scope involves ensuring compliance with relevant laws and regulations governing online commerce, food safety, data privacy, and labor practices in each operating region.

8. Continuous Improvement: The scope includes ongoing monitoring, analysis, and optimization of the app's performance and features. This may involve gathering user feedback, conducting market research, and implementing updates and enhancements to stay competitive and meet evolving customer needs.

Overall, the scope of the online delivery app is comprehensive and multifaceted, covering various aspects ranging from technology and operations to marketing and regulatory compliance. By effectively managing and executing within this scope, the app can achieve its objectives and succeed in the competitive online delivery market.



CHAPTER 2

SERVICES AND TOOLS REQUIRED

Services Used

If you're asking which service was used to build the online delivery app, it typically involves a combination of technologies and services. Here are some common components:

1. Cloud Computing Services: Platforms like Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform provide infrastructure and services for hosting the app's backend, databases, and storage solutions.
2. Mobile App Development Frameworks: Technologies like React Native, Flutter, or native development for iOS and Android are used to build the user-facing mobile app interfaces.
3. Backend Development: Frameworks and languages such as Node.js, Django, or Ruby on Rails are used to develop the server-side logic, API endpoints, and database interactions.
4. Database Management Systems: Databases like MySQL, PostgreSQL, MongoDB, or Firebase are used to store user data, product information, order details, and other relevant data.
5. Payment Gateways: Integration with payment gateways like Stripe, PayPal, or 1. *Google Analytics*: For tracking website/app traffic, user behavior, and conversion metrics.
6. *Social media analytics tools*: Platforms like Hootsuite or Sprout Social for monitoring social media engagement and sentiment analysis.



7. *Customer feedback platforms*: Integrating feedback from platforms like SurveyMonkey or Zendesk for understanding customer satisfaction and pain points.

8. RM systems*: If available, integrate data from customer relationship management systems like Salesforce or HubSpot for customer segmentation and sales performance analysis.

9. *Order management systems*: Data from order processing systems can provide insights into order volumeSquare facilitates secure online transactions .

BY averaging these technologies and services, developers can create a robust and feature-rich online delivery app that meets the needs of businesses and consumers effectively.purchases made through the app.



Tools and Softw

1. ***Data Collection Tools***: Use tools to gather data from various sources such as web analytics platforms, customer relationship management (CRM) systems, social media platforms, and transactional databases. Tools like Google Analytics, Mixpanel, Firebase, and custom APIs can be employed for this purpose.
2. ***ETL (Extract, Transform, Load) Tools***: Employ ETL tools to extract data from different sources, transform it into a consistent format, and load it into Power BI. Popular ETL tools include Microsoft Power Query, Alteryx, and Talend.
3. ***Database Management Systems (DBMS)***: If your data is stored in databases, you may need to interact with DBMS like SQL Server, MySQL, or PostgreSQL to access and manipulate the data before importing it into Power BI.
4. ***Data Warehousing Solutions***: Utilize data warehousing solutions such as Amazon Redshift, Google BigQuery, or Snowflake to store and manage large volumes of data for analysis.
5. ***Data Modeling Tools***: Use tools to model and structure your data effectively for analysis. Power BI itself provides robust data modeling capabilities through its Power Query Editor and DAX (Data Analysis Expressions) language.
6. ***Visualization Tools***: Leverage Power BI's visualization capabilities to create insightful dashboards and reports. Additionally, consider using other visualization tools like Tableau or QlikView for advanced



visualizations if needed.

7. ***Statistical Analysis Tools***: Integrate statistical analysis tools such as R or Python libraries (e.g., pandas, NumPy) into Power BI for advanced analytics and predictive modeling.
8. ***Text Analytics Tools***: If analyzing customer reviews or feedback, consider using text analytics tools like Azure Text Analytics or IBM Watson Natural Language Understanding to extract insights from unstructured text data.
9. ***Geospatial Analysis Tools***: Incorporate geospatial analysis tools such as ArcGIS or Mapbox into your analysis to visualize location-based data and understand spatial patterns.
10. ***Collaboration Tools***: Use collaboration tools like Microsoft Teams or Slack to share insights and collaborate with stakeholders on the analysis results generated using Power BI.

By integrating these tools and software with Power BI, you can perform a comprehensive 360-degree analysis of online delivery apps, covering various aspects such as user behavior, operational performance, market trends, and customer sentiment.



Software Requirement:

- 1. *Power BI Desktop*:** This is the primary tool for creating reports and dashboards. It's available for free from Microsoft's website.
- 2. *Power BI Service (optional)*:** If you want to share your reports and collaborate with others, you'll need a Power BI Pro subscription or use Power BI Premium capacities.
- 3. *Data Sources*:** Access to the data sources containing relevant information about online delivery apps. This might include databases, Excel files, APIs, or other data repositories.
- 4. *ETL Tools (optional)*:** Depending on the complexity of your data sources, you might need Extract, Transform, and Load (ETL) tools to prepare and clean the data before importing it into Power BI. Common ETL tools include Microsoft Power Query (built into Power BI), SQL Server Integration Services (SSIS), or third-party tools like Alteryx.
- 5. *Database Tools (optional)*:** If your data is stored in databases, you might need tools to query and extract the data efficiently. This could include SQL Server Management Studio (SSMS) for SQL Server databases or other database management tools.



6. *Power BI Custom Connectors (optional)*: If you're working with specialized data sources or APIs, you might need to develop custom connectors to integrate them into Power BI.

7. *Operating System*: Power BI Desktop is available for Windows, but you can view and interact with reports on the Power BI Service using a web browser on any operating system.

8. *Internet Connection*: To access online data sources, collaborate using Power BI Service, and download updates, you'll need a stable internet connection.

9. *Knowledge and Skills*: Familiarity with Power BI





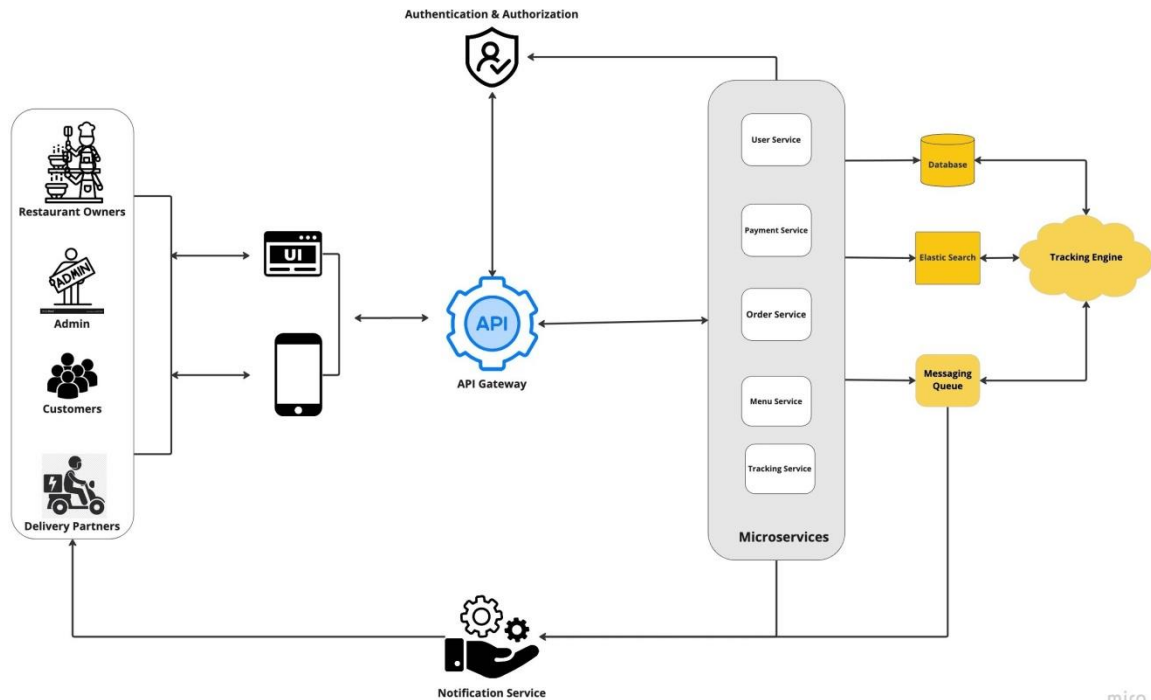
CHAPTER 3

ARCHITECTURE

3.1 Architecture

POWER BI ARCHITECTURE





Here's a high-level architecture for an online delivery app:

1. Client-Side (Frontend): User Interface (UI): Developed using HTML, CSS, and JavaScript for web applications, or native UI components for mobile apps. Business Logic: Implemented using frontend frameworks like React.js, Angular, or Vue.js to manage user interactions and client-side state. Communication: Interacts with the backend server via RESTful APIs or GraphQL to fetch data, submit orders, and receive updates.

2. Server-Side (Backend): Application Layer: Built using backend technologies such as Node.js, Python (with Django or Flask), Ruby (with Ruby on Rails), or Java (with Spring Boot) to handle business logic, process requests, and manage data. API Endpoints: Exposes RESTful or GraphQL APIs to allow communication between the client-side and server-side components.

3. Database: Data Storage: Utilizes a relational database management system (RDBMS) like PostgreSQL, MySQL, or SQLite, or a NoSQL database like MongoDB or Firebase Realtime Database to store user data, product information, orders, and other application data. Data Models: Defines data models and schemas to structure and organize data within the database, ensuring consistency and integrity.



4. External Services: Payment Gateway: Integrates with payment gateways such as Stripe, PayPal, or Square to securely process payments for orders. Geolocation Service: Integrates with mapping and geolocation APIs like Google Maps or Mapbox to provide address autocomplete, location-based search, and real-time tracking of deliveries. Communication Service: Integrates with communication APIs like Twilio or SendGrid to send notifications, alerts, and updates to users via SMS, email, or push notifications.

5. Infrastructure: Hosting Platform: Deploys the backend server and database on a cloud hosting platform like Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP), or Heroku for scalability, reliability, and availability. Content Delivery Network (CDN): Utilizes a CDN like Cloudflare or Amazon CloudFront to cache static assets and deliver content efficiently to users worldwide, reducing latency and improving performance.



This high-level architecture provides a foundation for building an online delivery app that is scalable, secure, and capable of delivering a seamless user experience across web and mobile platforms.



CHAPTER 4

MODELING AND RESULT

Managing Relationships

- 1. *Data Preparation*:** Gather data from various sources such as customer feedback, delivery times, order volumes, customer ratings, etc. Ensure the data is clean and structured properly.
- 2. *Data Modeling*:** Create a data model in Power BI by importing the data and defining relationships between different tables. For example, you might have tables for customers, orders, delivery times, ratings, and so on.
- 3. *Relationship Definition*:** Define relationships between the tables based on common fields such as customer ID, order ID, delivery ID, etc. This allows Power BI to accurately analyze and visualize data across different dimensions.
- 4. *Analysis*:** Use Power BI's visualization tools to perform a 360-degree analysis of the online delivery apps. Explore key metrics such as customer satisfaction, delivery efficiency, order accuracy, etc. Create dashboards and reports to present the findings.
- 5. *Feedback Loop*:** Continuously monitor the analysis and gather feedback from stakeholders. Use this feedback to refine the analysis and improve the insights provided by Power BI.

Priority	Hours
A	256
B	256
C	256
Total	256

Edit Relationships

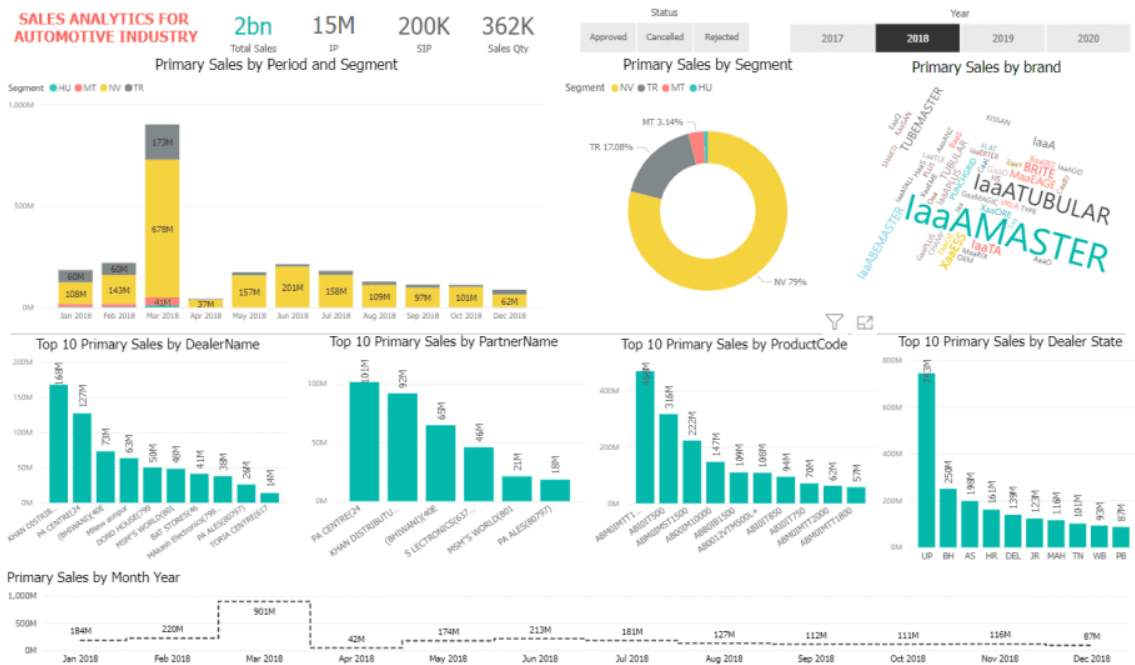
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CompanyEmployee	
Employ	Tenure City
Brewer, A	15 Redmond
Bowen, Eli	10 San Jose
Bento, Nu	15 Redmond
Hamilton,	3 San Jose
Han, Mu	1 San Jose
Ito, Shu	1 Redmond

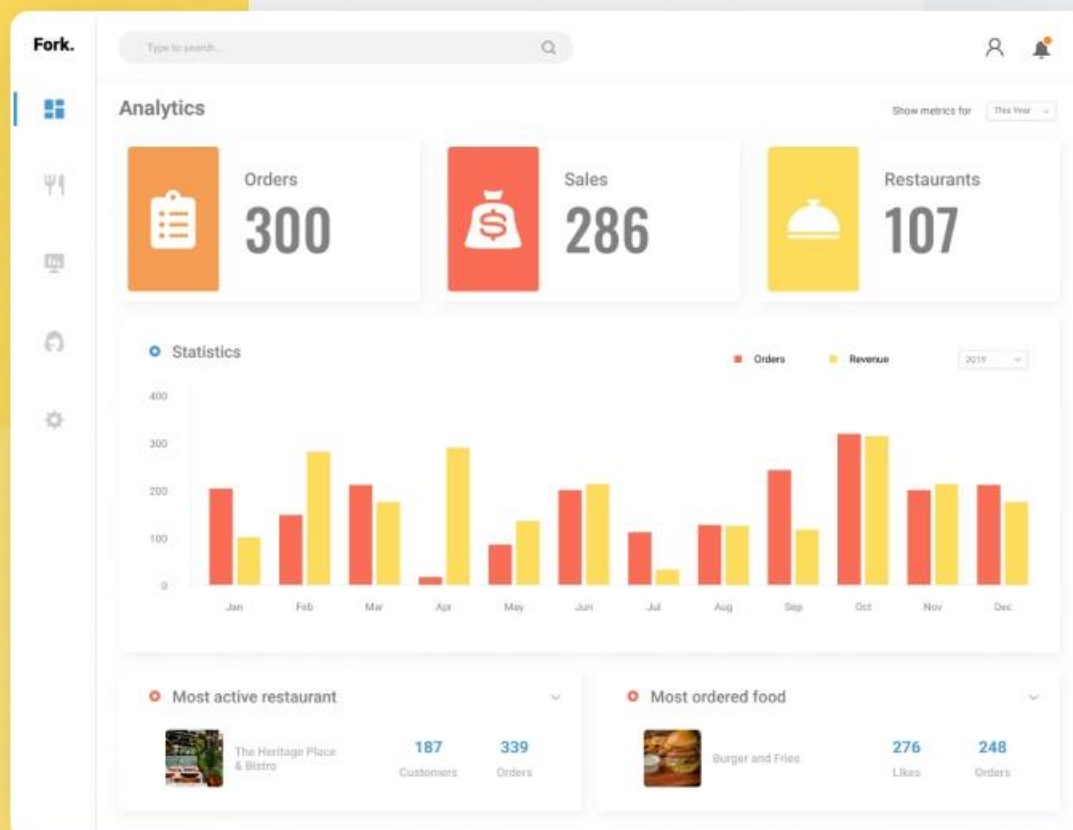
ProjectHours				
Ticket	SubmittedBy	Hours	Project	Date Submit
1001	Brewer, Alan	22	Blue	1/1/2013
1002	Brewer, Alan	26	Red	2/1/2013
1003	Ito, Shu	34	Yellow	12/4/2012
1004	Brewer, Alan	13	Orange	1/2/2012
1005	Bowen, Eli	29	Purple	10/1/2013
1006	Bento, Nuno	35	Green	2/1/2013
1007	Hamilton, David	10	Yellow	10/1/2013
1008	Han, Mu	28	Orange	1/2/2012
1009	Ito, Shu	22	Purple	2/1/2013
1010	Bowen, Eli	28	Green	10/1/2013
1011	Bowen, Eli	9	Blue	10/15/2013

CompanyProject	
Project	Priority
Blue	A
Red	B
Green	C
Yellow	C
Purple	B
Orange	C

Dashboard



Supermarket online service delivery dashboard



1. *Customer Segmentation*: Identifying distinct customer segments based on demographics, preferences, and behaviors can help tailor marketing strategies and product offerings for better engagement and retention.
2. *Performance Metrics*: Analyzing performance metrics such as delivery times, order accuracy, and customer satisfaction scores can highlight areas of improvement to enhance overall service quality.
3. *Market Trends*: Monitoring market trends, competitor performance, and consumer feedback can provide valuable insights for strategic decision-making and staying ahead in the competitive landscape.
4. *Optimization Opportunities*: Identifying bottlenecks in the delivery process, optimizing resource allocation, and streamlining operations can lead to cost savings and improved efficiency.
5. *Recommendation Engine*: Implementing a recommendation engine based on customer preferences and past behavior can enhance personalized user experiences and drive higher conversion rates.
6. *Predictive Analytics*: Leveraging predictive analytics to forecast demand, anticipate customer needs, and optimize inventory management can help minimize stockouts and

maximize revenue.

7. *User Experience Enhancements*: Continuously enhancing the user experience through intuitive interfaces, seamless navigation, and responsive customer support can foster loyalty and encourage repeat business.

Overall, leveraging data-driven insights through Power BI can empower online delivery apps to make informed decisions, optimize operations, and deliver exceptional experiences to customers.

FUTURE SCOPE

Future scope for the online delivery app is promising, with several avenues for growth and innovation. Embracing emerging technologies such as artificial Theintelligence (AI) and machine learning can enhance the app's capabilities in predictive ordering, personalized recommendations, and route optimization, leading to improved efficiency and customer satisfaction. Analyzing online delivery apps through a 360-degree perspective using Power BI holds immense future potential. It can provide insights into various aspects such as customer behavior, order trends, delivery efficiency, market performance, and competitor analysis. With the growing reliance on data-driven decision-making in the business world, the demand for comprehensive analytics solutions like this will likely continue to increase. Additionally, as online delivery services expand and evolve, the need for sophisticated tools to manage and optimize operations will become even more critical. Therefore, investing in the development and enhancement of such analytics capabilities could be highly beneficial for businesses operating in the online delivery sector.

Overall, by continuously innovating, adapting to changing market dynamics, and prioritizing customer satisfaction, the online delivery app can capitalize on future opportunities and maintain its position as a market leader in the rapidly evolving delivery industry



REFERENCES

<https://powerbi.pl/en/ms-power-bi/360-degree-analytics>