

Dashboard Documentation

Page 1: Overview

Purpose

To provide a high-level summary of the business's performance, focusing on key metrics, revenue distribution, and delivery efficiency.

Visuals and Insights

1. Cards

- **On-time Percentage:** Displays the percentage of orders delivered within the estimated time, offering a quick glance at delivery performance.
- **Average Delivery Days:** Represents the average time it takes to deliver an order, helping monitor delivery efficiency.
- **Total Revenue:** Shows the cumulative revenue, providing an overall financial view.
- **Total Number of Orders:** Displays the total number of orders processed, giving a measure of business activity.

2. Bar Chart: Geographical Regions Revenue Generation

- Displays revenue contribution from different regions, highlighting top-performing areas.
- **Business Value:** Identifies regions requiring more focus or further investment.

3. Bar Chart: Top-performing Product Categories

- Highlights the best-selling product categories for better inventory planning and marketing efforts.

4. Bar with Line Chart: Average Delivery Time Across Cities

- The bar chart shows average delivery times for cities.
- The line represents the estimated delivery time for comparison.
- **Business Value:** Highlights cities with delivery delays, enabling targeted logistical improvements.

Page 2: Sales Details

Purpose

To provide a detailed analysis of sales performance, order patterns, and cancellation trends for better operational decisions.

Visuals and Insights

1. Cards

- Average Product Weight

- Average Product Width
 - Average Product Length
 - Average Product Height
 - 2. **Bar Chart with Line: Top 10 Purchase Cities**
 - Bars show revenue from the top 10 cities, while the line represents the number of orders.
 - **Business Value:** Identifies cities driving the most revenue and high order volumes.
 - 3. **Line Chart: Canceled Rate Across Product Categories**
 - Visualizes the cancellation rate for different product categories.
 - **Business Value:** Identifies categories with high cancellation rates for investigation and process improvement.
 - 4. **Scatter Plot: Correlation Between Delivery Time and Customer Satisfaction**
 - Shows the relationship between delivery time and satisfaction scores.
 - **Business Value:** Highlights how delivery time affects customer satisfaction.
 - 5. **Line Chart: Trend of Orders Over Time**
 - Contains two lines: one for the number of orders and another for order value.
 - **Business Value:** Tracks sales trends to identify peak periods or declining performance.
 - 6. **Matrix: Orders Per Different Hours**
 - Displays the distribution of orders across different hours of the day.
 - **Business Value:** Identifies peak order times for operational planning.
 - 7. **Pie Chart: Orders Meeting Estimated Delivery Time**
 - Shows the proportion of orders delivered on time.
 - **Business Value:** Measures logistics efficiency and customer satisfaction.
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Page 3: Customer Insights and RFM Analysis

Purpose

To understand customer behavior, segment customers for better targeting, and analyze satisfaction levels **knowing that customers have Frequency of 1** so in RFM our main focusing were **Recency** and **Monetary** to segment customers based on.

Visuals and Insights

1. **Map: Orders for Each Customer Segment Based on Location**
 - Shows orders represented by bubbles, differentiated by customer segments.
 - **Business Value:** Pinpoints regions dominated by specific customer segments for targeted marketing.
2. **Bar Chart: Overview of Customer Segments**
 - Displays the number of customers in each segment.
 - **Business Value:** Offers insights into customer distribution and helps prioritize high-value segments.
3. **Small Multiple Bar Charts: Customer Segmentation by State**
 - Each state shows its customer segments.

- **Business Value:** Provides a granular view of customer segments by region.
 - 4. **Bar Chart: Different Satisfaction Levels**
 - Displays the number of customers across satisfaction levels.
 - Tooltip reveals segment-specific details when hovering over bars.
 - **Business Value:** Identifies areas where customer experience can be improved.
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Page 4: ML Model Predictions

Purpose

To forecast future sales by product category and provide actionable insights for inventory and marketing strategies, here we use our data for next 6 months based on my ML model.

Visuals and Insights

1. **Line Charts: Predicted Sales Per Product Category**
 - Separate line charts for each category show forecasted sales over the next six months.
 - **Business Value:** Enables proactive planning for high-demand categories and optimizing resources.
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Future Achievements and Enhancements

1. **Enhance RFM Segmentation**
 - Introduce dynamic segments that adapt to changing customer behavior.
 2. **Integrate ML Predictions with Regional Insights**
 - Combine product category predictions with geographical analysis for targeted stock distribution.
 3. **Interactive Logistics Map**
 - Use the Python-generated map to integrate customer-seller distances directly into Power BI for live insights.
 4. **Customer Churn Prediction**
 - Expand ML models to predict customer churn based on satisfaction scores and order patterns.
 5. **Real-Time Dashboard Updates**
 - Enable real-time data refresh to provide up-to-the-minute insights for decision-making.
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Additional Notes

Customer Segmentation ML Model

- A customer segmentation model using unsupervised ML (KMeans) clusters customers into five classes based on:
 - `customer_zip_code_prefix`
 - `payment_value`
 - `price`

Interactive Map (Python)

- The Python-generated interactive map visualizes customer-seller proximity:
 - **Impact:** Enhances delivery routing, reduces costs, and improves customer satisfaction by minimizing delivery time.
 - Python scripts handle data processing, including loading data into SQL Server and extracting it using `pyodbc`.

Summary

This dashboard provides a comprehensive analysis of business performance, combining descriptive analytics and predictive modeling. It supports strategic planning, operational efficiency, and customer engagement, paving the way for continuous improvement.