Pizza Sales Dashboard Report

Uncovering Insights from Pizza Sales Data

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This report presents a comprehensive analysis of Pizza's sales performance, customer preferences, and order behavior. Utilizing advanced SQL for robust data validation and Power BI for dynamic visualization, this dashboard aims to deliver actionable insights crucial for strategic decision-making and operational optimization. Our primary objective is to transform raw sales data into a clear, interactive dashboard that highlights key trends and opportunities for growth, ultimately enhancing customer satisfaction and boosting revenue.

Problem Statement

To analyze pizza sales data using SQL and Power BI to uncover patterns in sales performance, customer preferences, and order behavior. The objective is to build a dashboard that delivers actionable insights through Key Performance Indicators (KPIs), data transformations, and visualizations. This dashboard will serve as a critical tool for understanding our market position and guiding future business strategies.

Data Preparation & KPI Overview

Dataset Source & Initial State

The analysis is built upon the `pizza_sales` dataset, containing essential information required for a holistic understanding of our operations. Key columns include:pizza_id `order_id`, `pizza_name`, `pizza_category`,'pizza_ingridients `pizza_size`,'pizza_name_id', `quantity`, `total_price`,'unit_price', `order_date`,'order_time'. The challenge involved transforming this raw data into a clean, analytical-ready format suitable for advanced reporting and visualization.

Data Transformation in Power Query Editor

Rigorous data cleaning and transformation were performed within Power BI's Power Query Editor to ensure accuracy and consistency:

- **Standardized Pizza Sizes:** Raw codes (S, M, L, XL, XXL) were replaced with their full, user-friendly forms (Regular, Medium, Large, XLarge, XXLarge). This crucial step eliminates ambiguity and ensures consistent readability in all visualizations.
  S → RegularM → MediumL → LargeXL → XLargeXXL → XXLarge
- **Created Custom Columns:**
  - **Order Month:** Abbreviated month names were extracted for concise labeling: = Text.Upper(Text.Start([Month Name], 3)) (e.g., JAN, FEB).
  - **Order Day:** Abbreviated day names were derived for daily trend analysis: = Text.Upper(Text.Start([Day Name], 3)) (e.g., MON, TUE).
  - **Added a Column for Order Date to Month:** Full month names were added to facilitate comprehensive time-based trend analysis

These transformations are fundamental to ensuring data accuracy, consistency, and enhancing the overall analytical capabilities of the dashboard.

Key Performance Indicators (KPIs) – Using DAX

Essential metrics were calculated using DAX (Data Analysis Expressions) to provide a high-level overview of ProPizza's business performance:

KPI Name	DAX Formula	Significance
Total Revenue	SUM(pizza_sales[total_price])	Overall sales income generated.
Total Pizzas Sold	SUM(pizza_sales[quantity])	Total units of pizza moved.
Total Orders	DISTINCTCOUNT(pizza_sales[order_id])	Total unique customer transactions.
Avg Order Value	[Total Revenue] / [Total Orders]	Average spending per transaction.
Avg Pizzas per Order	[Total Pizzas Sold] / [Total Orders]	Average number of items purchased per order.

SQL Validation & Core Sales Performance

SQL-Based Validation (Used in SSMS)

To ensure data integrity and build confidence in our Power BI dashboard, rigorous SQL queries were executed in SQL Server Management Studio (SSMS) to cross-verify key metrics and trends. This "source-to-target" validation process confirms that the raw data accurately translates into the dashboard's output, minimizing discrepancies and fortifying the foundation of our Power BI model.

Examples of Validation Queries:

- **Total Revenue Validation:** Confirmed Power BI aggregated total revenue matched the sum directly from the raw data. SELECT SUM(total_price) AS [Total Revenue] FROM pizza_sales;
- **Orders by Day Validation:** Verified daily order counts to ensure accuracy of time-series trends. SELECT order_date, COUNT(DISTINCT order_id) AS [Total Orders] FROM pizza_sales GROUP BY order_date ORDER BY order_date;

This systematic approach is crucial for maintaining trust in the insights generated by the dashboard .

Core Sales Performance (Dashboard Overview)

The dashboard's initial view prominently displays the Key Performance Indicators (KPIs), offering an immediate, high-level snapshot of ProPizza's business health. These metrics provide a quick understanding of the operational magnitude and efficiency:

- **Total Revenue: ~817.86K** — Indicating a robust overall sales performance.
- **Total Pizzas Sold: ~49574** — Reflecting a high volume of units moved, showcasing product demand.
- **Total Orders: ~21350** — Showing a large number of unique customer transactions, hinting at either a broad customer base or frequent repeat orders.
- **Avg Order Value: ~38.31** — Suggesting customers frequently purchase multiple items or larger, higher-priced pizzas per transaction.
- **Avg Pizzas per Order: ~2.32 Pizzas** — While customers typically order one pizza, this slight average increase indicates a common occurrence of multi-pizza or side-item orders.

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Deep Dive into Sales Trends & Preferences

Chart Visualizations: Uncovering Patterns (Power BI)

The Power BI dashboard leverages a variety of chart types to transform raw data into intuitive, actionable insights. Each visualization is designed to highlight specific aspects of sales performance and customer behavior:

- **Percentage of Sales by Pizza Category (Pie Chart):** This visualization effectively highlights the contribution of each pizza category to total revenue. For instance, 'Classic' and 'Veggie' categories often dominate the pie, indicating primary customer preferences and guiding menu development and marketing focus. It's crucial for understanding where the majority of the revenue is generated.
- **Total Pizzas Sold by Pizza Category (Funnel Chart):** Visually represents the sales conversion funnel for the top pizzas, from the most popular to the fifth most

popular. This chart clearly showcases the hierarchy of customer demand, which is critical for stocking, pricing, and promotional strategies. It provides a quick glance at the most lucrative pizza offerings.

- **Monthly Order Trends (Area Chart):** Illustrates fluctuations in total orders throughout the Different Months. Consistently, Months (June-August) show significantly higher order volumes, suggesting these are peak operational periods requiring increased staffing and preparation. Weekdays might show dips, presenting opportunities for off-peak promotions to balance demand.
- **Daily Trends Order Volume (Column Chart):** Reveals Weekly trends in Orders, showing which Week experiences higher or lower order activity. This information is invaluable for seasonal marketing campaigns .
- **Percentage Sales by Pizza Size (Pie Chart):** After standardizing pizza sizes, this chart clearly visualizes which pizza sizes are most popular among customers. 'Large' and 'Medium' typically account for the majority of sales, directly influencing inventory management and pricing strategies. It confirms that larger sizes are often preferred by customers, likely for group orders or perceived better value.
- **Bar Chart: Top & Bottom 5 Pizzas by Revenue, Quantity and Sales:** A detailed table provides a clear breakdown of the highest and lowest performing pizzas based on both quantity sold and total orders. This granular insight helps in identifying winning products for sustained promotion and underperforming items that may require menu review or targeted marketing interventions.

Actionable Insights & Recommendations

Key Insights Derived from the Dashboard:

- **Category & Item Performance:** The 'Classic' and 'Supreme' pizza categories consistently drive the most revenue, with individual items like 'The Classic Deluxe' and 'The Thai Chicken' being top individual sellers. This signifies a strong and consistent demand for traditional and common flavor profiles.
- **Peak Demand Periods:** Weekends (Friday-Thursday) are identified as critical peak periods for order and revenue generation. Specific months also show heightened activity (e.g., June till August), underscoring the need for optimized staffing and supply chain management during these times.
- **Popular Sizes:** 'Large' and 'Medium' pizzas account for the overwhelming majority of sales, indicating a strong customer preference for family-sized or shareable options over smaller or less common sizes.

Recommendations:

1. **Targeted Marketing & Promotions:** Develop focused marketing campaigns for top-performing pizzas and categories, leveraging their proven popularity.

Consider introducing bundle deals or loyalty programs specifically around 'Large' and 'Medium' pizzas to capitalize on consumer preference.

2. **Strategic Inventory Management:** Prioritize and maintain optimal stock levels for ingredients and components of popular pizza categories, specific names, and sizes ('Large', 'Medium') to prevent stockouts and fully capitalize on demand.
3. **Menu Review & Optimization:** Analyze underperforming pizzas/categories (identified from the 'Bottom 5' table) to decide on potential menu revisions, targeted promotional efforts, or discontinuation to streamline offerings.
4. **Off-Peak Demand Generation:** Introduce specific promotions or discounts during identified slower periods (e.g., weekday lunch deals) to smooth out demand fluctuations and increase sales during off-peak hours.

Summary & Future Scope

This Pizza Sales Dashboard Report has successfully transformed raw sales data into a powerful and intuitive tool for strategic decision-making. By cleaning the data, defining robust KPIs, and visualizing key trends, we have gained a comprehensive understanding of sales performance and customer preferences. This dashboard serves as a foundational step towards achieving data-driven excellence at Pizza.

Future Enhancements & Considerations:

- **Customer Demographics Integration:** Incorporate customer demographic data to understand purchasing behavior across different segments and personalize marketing efforts.
- **Marketing Campaign Analysis:** Integrate data from marketing campaigns to analyze their direct impact on sales performance and ROI.
- **Ingredient-Level Analysis:** Conduct deeper analysis at the ingredient level for more granular supply chain optimization and cost control.
- **Predictive Modeling:** Develop predictive models for future sales forecasting, enabling proactive planning for inventory, staffing, and marketing.