**Pizza Sales SQL & Excel Dashboard Report**

**1. Project Description**

The **Pizza Sales Analysis** project aims to provide insights into business performance by analyzing sales data using **SQL for data extraction and transformation** and **Excel for dashboard visualization**. This project helps track key performance indicators (KPIs), identify trends, and optimize decision-making for increased profitability.

The dataset includes order details, pizza types, categories, and sales data. By leveraging **SQL queries for data processing** and **Excel dashboards for visualization**, the project enables a structured approach to understanding customer preferences and sales patterns.

**2. Technologies Used & Their Purpose**

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| Technology | Purpose |
| SQL (MySQL) | Used for querying, pre-cleaning, and transforming raw sales data. Helps in calculating KPIs and preparing datasets for analysis. |
| Excel (Pivot Tables, Charts, Dashboards) | Used for creating interactive dashboards, visualizing sales trends, and presenting key insights in an easy-to-understand format. |
| Python (Optional - Pandas, Matplotlib, Seaborn) | If required, Python can be used for exploratory data analysis (EDA) and additional data manipulation. |

**3. KPI Requirements**

To gain deeper insights into pizza sales performance, the following key metrics are calculated:

1. **Total Revenue** – The sum of all pizza order prices.
2. **Average Order Value (AOV)** – Total revenue divided by the total number of orders.
3. **Total Pizzas Sold** – The sum of the quantities of all pizzas sold.
4. **Total Orders** – The total number of orders placed.
5. **Average Pizzas Per Order** – Total pizzas sold divided by the total number of orders.

**4. Chart Requirements**

To visualize sales data and identify trends effectively, the following charts will be included:

**Order Trends**

1. **Daily Trend for Total Orders (Bar Chart):**
   * Displays daily order trends over a specific period.
   * Helps identify fluctuations and patterns in daily sales.
2. **Hourly Trend for Total Orders (Line Chart):**
   * Shows order volume variations across different hours of the day.
   * Helps determine peak sales hours for better staffing and marketing strategies.

**Sales Distribution**

1. **Percentage of Sales by Pizza Category (Pie Chart):**
   * Illustrates the share of total sales for different pizza categories.
   * Helps identify the most and least popular pizza categories.
2. **Percentage of Sales by Pizza Size (Pie Chart):**
   * Displays the proportion of sales across various pizza sizes.
   * Helps understand customer preferences for different sizes.
3. **Total Pizzas Sold by Pizza Category (Funnel Chart):**
   * Presents a comparative view of total sales across different pizza categories.
   * Helps in understanding which categories perform better.

**Best & Worst Performing Pizzas**

1. **Top 5 Best Sellers by Total Pizzas Sold (Bar Chart):**
   * Highlights the top 5 most popular pizzas based on sales volume.
   * Provides insights into high-demand pizzas.
2. **Bottom 5 Worst Sellers by Total Pizzas Sold (Bar Chart):**
   * Showcases the least popular pizzas in terms of sales.
   * Helps identify underperforming menu items for potential optimization.

**6. Why We Used SQL in This Project**

* **Pre-cleaning and summarizing data** before importing it into Excel, ensuring a structured dataset.
* **SQL queries retrieve only the required information quickly**, reducing manual filtering in Excel.
* **Excel struggles with large datasets**, whereas SQL can handle **millions of records efficiently**.
* **Running calculations on big datasets in Excel is slow**, while **SQL executes queries much faster**, improving performance.

✅ **Data Cleaning:** Removed duplicates, standardized text, handled missing values.  
✅ **Pre-Aggregation:** Summarized KPIs before sending data to Excel.  
✅ **Date & Time Processing:** Extracted weekdays and hours for trend analysis.  
✅ **Filtering:** Exported only relevant data to improve Excel performance.

**7. Why We Used Excel in This Project**

* **Data cleaning and transformation** were performed using Excel’s built-in tools like **Power Query, filtering, and formulas**.
* **Created interactive dashboards** with charts and visualizations to analyze sales trends.
* **Pivot tables and formulas** were used to calculate KPIs such as **total revenue, average order value, and total pizzas sold**.
* **Conditional formatting and slicers** helped in making data-driven insights more accessible.

**8. Data Cleaning & Formula Usage**

**Data Cleaning Methods Used:**

* Find & Replace: Standardized pizza size names to ensure consistency.
* Sorting & Filtering: Removed duplicate or incorrect entries.
* Manual Corrections: Fixed missing values and formatting issues.

**Formulas Used for Data Cleaning in the Sheet:**

* Order Percentage Calculation:
  + =1/COUNTIF(B:B,[@[order\_id]]) – Determines the proportion of each order ID.
* Extracting the Day of the Week from Date:
  + =TEXT([@[order\_date]],"dddd") – Converts the order date into a day name (e.g., "Monday").
* Removing Extra Spaces:
  + =TRIM(A2) – Cleans unnecessary spaces from text fields.
* Replacing Unwanted Characters:
  + =SUBSTITUTE(A2, "$", "") – Removes special symbols or unwanted characters.

**9. KPI Calculation Using Pivot Tables**

Since KPI calculations required aggregating large data, we used Pivot Tables instead of formulas:

* Total Revenue → Summed the total price column.
* Average Order Value → Created a calculated field (Total Revenue / Total Orders).
* Total Pizzas Sold → Summed the quantity column.
* Total Orders → Counted unique order IDs.
* Average Pizzas per Order → Used a calculated field (Total Pizzas Sold / Total Orders).

**5. Conclusion**

The **Pizza Sales SQL & Excel Dashboard** project offers a **data-driven approach to understanding sales trends, customer preferences, and operational performance**. By tracking key metrics and visualizing data, businesses can:

* **Optimize menu offerings** by analyzing top-selling and underperforming pizzas.
* **Improve staffing and marketing strategies** by identifying peak sales hours.
* **Enhance customer engagement** by understanding preferences for pizza sizes and categories.
* **Make informed business decisions** using interactive reports and trend analysis.

Using **SQL for data extraction** and **Excel for interactive dashboards**, this project delivers **actionable insights** to improve sales and operational efficiency.