**Pizza Place Sales Analysis: Detailed Project Documentation**

**1. Project Overview**

The purpose of this project is to analyze a full year of sales data for a fictitious pizza place. By studying the patterns in customer behavior, order trends, and product performance, the goal is to derive actionable insights to improve sales, optimize the menu, and enhance overall profitability.

**2. Dataset Description**

The dataset consists of four interrelated tables:

**Orders Table**

* Captures the details of each order placed.
* **Fields**:
  + order\_id: Unique identifier for each order.
  + date: Date of the order (e.g., 2024-12-01).
  + time: Time of the order (e.g., 18:45).

**Order Details Table**

* Provides details of each pizza in an order.
* **Fields**:
  + order\_details\_id: Unique identifier for each item within an order.
  + order\_id: Links to the orders table.
  + pizza\_id: Links to the pizzas table.
  + quantity: Number of pizzas ordered of a specific type and size.

**Pizzas Table**

* Contains detailed information about each pizza.
* **Fields**:
  + pizza\_id: Unique identifier for each pizza.
  + pizza\_type\_id: Links to the pizza\_types table.
  + size: Size of the pizza (Small, Medium, Large, X Large, XX Large).
  + price: Price of the pizza in USD.

**Pizza Types Table**

* Details the categories and ingredients of pizzas.
* **Fields**:
  + pizza\_type\_id: Unique identifier for each pizza type.
  + name: Name of the pizza as shown on the menu (e.g., Margherita, BBQ Chicken).
  + category: Broad category of the pizza (Classic, Chicken, Supreme, Veggie).
  + ingredients: List of ingredients used in the pizza.

**3. Project Goals**

The project focuses on answering the following key questions:

1. **Customer Behavior**:
   * How many customers place orders daily?
   * Are there any peak ordering times during the day?
2. **Order Insights**:
   * How many pizzas are typically included in a single order?
   * Which pizzas are the most popular (bestsellers)?
3. **Revenue Analysis**:
   * What is the total revenue generated over the year?
   * Are there patterns of seasonality or monthly trends in revenue?
4. **Product Optimization**:
   * Are there any pizzas that underperform and should be removed from the menu?
   * Can we identify pizzas or time periods for targeted promotions?

**4. Key Metrics**

**Customer Metrics**

* **Daily Customers**: Count of unique orders (order\_id) for each day.
* **Peak Hours**: Number of orders grouped by the hour of the day.

**Order Metrics**

* **Average Pizzas per Order**: Total pizzas ordered (quantity) divided by the total number of orders.
* **Bestselling Pizzas**: Pizzas with the highest total quantity ordered.

**Revenue Metrics**

* **Total Revenue**: Aggregated revenue, calculated as quantity × price for each pizza.
* **Monthly Revenue**: Revenue grouped by month to identify trends and seasonality.
* **Category Contribution**: Revenue contribution from each pizza category (e.g., Classic, Chicken).

**Product Metrics**

* **Underperforming Pizzas**: Pizzas with consistently low sales (low total quantity).
* **Promotional Opportunities**:
  + Identify bestselling pizzas to promote further.
  + Determine peak times or slow periods for special deals.

**5. Level of Detail**

The analysis will be conducted at varying levels of granularity:

**Daily Level:**

* Analyze the total number of orders placed daily.
* Track daily revenue trends to identify high-performing days of the week.

**Hourly Level:**

* Identify the busiest times of day based on order timestamps.
* Track revenue per hour to determine peak revenue times.

**Monthly/Seasonal Level:**

* Examine monthly revenue trends to detect seasonality.
* Compare revenue across seasons (e.g., winter vs. summer) to identify significant variations.

**Order Level:**

* Study the composition of each order:
  + Number of pizzas per order.
  + Popular combinations of pizza types and sizes.

**Product Level:**

* Analyze sales for each pizza type and size.
* Evaluate the popularity of pizza categories (e.g., Veggie vs. Supreme).
* Assess pricing effectiveness by comparing revenue across pizza sizes.