Business Requirements Document (BRD)

Project Title: Pizza Sales Analysis

1. Project Overview

The **Pizza Sales Analysis** project aims to analyze transactional data from a pizza store to uncover insights about sales performance, customer behavior, and operational efficiency.
The analysis will focus on identifying trends, key performance indicators (KPIs), and business opportunities that can help management make data-driven decisions on marketing, inventory, and staffing.

2. Business Objectives

The primary objectives of this project are to:

- Calculate **overall business performance metrics** such as total revenue, total pizzas sold, and number of unique orders.
- Analyze **sales patterns** across pizza categories, sizes, and types.
- Examine **time-based trends** (daily, monthly, and hourly) to identify peak business hours and seasonal performance.
- Identify **best-selling and least-selling pizzas** by both revenue and quantity.
- Understand **customer purchasing behavior** using metrics like Average Order Value (AOV) and Average Pizzas per Order.
- Provide **interactive visual dashboards** for clear and quick business insights.

3. Data Source & Description

Dataset: pizza_sales.csv

Field Name	Description
order_id	Unique identifier for each order
pizza_id	Unique identifier for each pizza
pizza_name	Name of the pizza sold
quantity	Number of pizzas sold in an order
total_price	Total value (revenue) of the order
date	Date when the order was placed
time	Time when the order was placed
pizza_category	Category of pizza (Classic, Supreme, Veggie, Chicken)
pizza_size	Size of pizza (S, M, L, XL)

4. Key Performance Indicators (KPIs) :

KPI	Formula	Purpose
Total Revenue	Sum(total_price)	Measures total sales generated
Total Pizzas Sold	Sum(quantity)	Shows total quantity sold
Total Orders	Count(unique order_id)	Indicates customer transaction volume
Average Order Value (AOV)	Total Revenue ÷ Total Orders	Average revenue earned per order
Average Pizza per Order	Total Pizzas Sold ÷ Total Orders	Average number of pizzas in a single order

5. Analysis & Visualizations

A. Time-Based Analysis

1. **Daily Sales Trend**
    - Visual: Line or bar chart of total sales per day.
    - Insight: Identify busiest days (weekends vs weekdays).
    - Use: Helps plan staff shifts and delivery scheduling.
2. **Hourly Sales Trend**
    - Visual: Line chart of orders or revenue by hour.
    - Insight: Reveals peak meal times (lunch/dinner rush).
    - Use: Guides preparation and inventory readiness.
3. **Monthly Sales Trend**
    - Visual: Line chart showing monthly total revenue.
    - Insight: Tracks seasonal performance or promotional effects.
    - Use: Useful for marketing campaigns and stock planning.

B. Category & Size Analysis

1. **Sales by Category**
    - Visual: Bar chart comparing revenue across pizza categories (Classic, Supreme, Veggie, Chicken).
    - Insight: Identifies top-performing and low-performing categories.
    - Example: “Classic” pizzas contribute the largest share of sales.
2. **Sales by Pizza Size**
    - Visual: Donut or bar chart showing revenue and quantity by pizza size (S, M, L, XL).
    - Insight: Large pizzas (L) generate the highest revenue.
    - Use: Helps adjust production and pricing strategies.
3. **Sales by Category & Size Combination**

- Visual: Clustered bar chart or heatmap.
- Insight: Reveals which size-category pairs are most popular (e.g., Large Classic pizzas).

C. Product Performance

1. **Top 5 Best-Selling Pizzas**
    - Visual: Horizontal bar chart.
    - Metric: Based on revenue and total quantity sold.
    - Use: These pizzas can be promoted in marketing and combos.
2. **Bottom 5 Least-Selling Pizzas**
    - Visual: Horizontal bar chart.
    - Metric: Based on revenue and sales count.
    - Use: Consider menu redesign, pricing change, or discontinuation.

D. Ingredient & Inventory Insights

- Identify the most commonly used ingredients from top-selling pizzas.
- Helps in supply chain planning and avoiding stockouts.
- Supports efficient inventory management by predicting high-demand ingredients.

6. Business Questions Answered

- What is the total revenue generated by the store?
- How many pizzas are sold per day, month, and year?
- Which pizza category and size generate the most revenue?
- Which pizzas are top and bottom performers?
- What is the average customer order size and spending?
- When are the peak sales hours and days?

7. Deliverables

- Data Cleaning & Processing Notebook (Python / Pandas)
- Interactive Dashboards (Matplotlib / Plotly / Power BI)
- Detailed BRD Document (this document)
- KPI Summary Report with Insights & Recommendations

8. Tools & Technologies

- **Language:** Python
- **Libraries:** Pandas, Matplotlib, Seaborn, Plotly
- **Dashboarding:** Power BI / Tableau (optional)
- **Environment:** Jupyter Notebook or Google Colab

9. Conclusion & Recommendations

The pizza sales analysis reveals actionable insights to improve profitability and operations.

Recommendations:

- Focus marketing efforts on **top-performing categories** like Classic and Supreme pizzas.
- Review pricing and recipe strategy for **low-performing pizzas**.
- Use **sales trends** to plan staffing and inventory for high-demand days and hours.
- Regularly update dashboards and monitor KPIs to track performance improvements.
- Explore **customer segmentation** for targeted promotions (e.g., weekend offers, large pizza discounts).