**Pizza Sales Analysis Report**

**Project Objective:** To analyze pizza sales data using SQL and visualize key business insights in Python. The project utilizes a MySQL database to extract meaningful patterns from customer orders and purchases and presents the results with data visualizations for decision-making.

**1. Total Orders Placed**

* **Query Used:** COUNT(order\_id) from the orders table.
* **Result:** 21,350 total orders were placed.

**2. Total Revenue Generated**

* **Query Used:** SUM(orders\_details.quantity \* pizzas.price).
* **Result:** Total revenue generated from pizza sales is **817,860.05**.

**3. Highest-Priced Pizza**

* **Query Used:** Join pizza\_types and pizzas tables, ordered by price descending.
* **Result:** The highest-priced pizza is **The Greek Pizza**.

**4. Most Common Pizza Size Ordered**

* **Query Used:** Grouped by pizzas.size and counted the order\_details.
* **Result:** The most common pizza size ordered is **Large (L)**.

**5. Top 5 Most Ordered Pizza Types**

* **Query Used:** Grouped by pizza\_types.name and summed orders\_details.quantity.
* **Result Visualization:** Bar plot using Seaborn with viridis palette.
* **Insight:** Displays the 5 pizza types with highest demand.

**6. Quantity Ordered by Pizza Category**

* **Query Used:** Grouped by pizza\_types.category and summed orders\_details.quantity.
* **Result Visualization:** Pie chart.
* **Insight:** Shows share of each pizza category based on quantity ordered.

**7. Order Distribution by Hour of Day**

* **Query Used:** Grouped by HOUR(order\_time) and counted order\_id.
* **Result Visualization:** Seaborn barplot using mako palette.
* **Insight:** Identifies peak ordering hours.

**8. Average Orders Per Day**

* **Query Used:** Grouped by order\_date, summed orders, and calculated AVG.
* **Result:** The average number of pizza orders per day is **138**.

**9. Top 3 Pizzas by Revenue**

* **Query Used:** Grouped by pizza\_types.name and calculated total revenue.
* **Result Visualization:** Horizontal Seaborn barplot using magma palette with revenue labels.
* **Insight:** Highlights the three pizzas generating the highest revenue.

**10. Revenue Contribution by Pizza Category**

* **Query Used:** Each category's revenue divided by total revenue.
* **Result Visualization:** Colored pie chart using a custom palette.
* **Insight:** Illustrates each category’s percentage contribution to overall revenue.

**11. Top 3 Revenue-Generating Pizzas Per Category**

* **Query Used:** RANK() window function to rank pizzas within each category.
* **Result Visualization:** Horizontal barplot grouped by pizza category with labeled revenue values.
* **Insight:** Identifies leading products within each pizza category.

**Conclusion:** This project provided comprehensive insights into pizza sales performance. Key metrics such as order volume, revenue generation, category contribution, and peak operational hours were extracted using SQL. The use of visualizations in Python (Seaborn and Matplotlib) ensured clarity in communicating these insights. This analysis can directly support inventory planning, marketing targeting, and strategic decision-making in a data-driven pizza business environment.