Pizza Place Sale EDA Report

Project Summary and Description:

This report presents the findings of an exploratory data analysis (EDA) project focused on pizza sales data using SQL and then using Power BI to visualize the results.

This project aims to analyze pizza sales data from a fictitious pizza place to gain insights into customer purchasing behavior and identify opportunities for increasing sales revenue. The data was collected from January 2015 to December 2015.

The data consists of the following main tables:

- *orders*: Information about orders including date and time of order placement
- *order_details*: Contains detailed information about each item in every order, including order_details_id, order_id, pizza_id, and quantity
- *pizzas*: Defines the various pizza types along with their prices and sizes
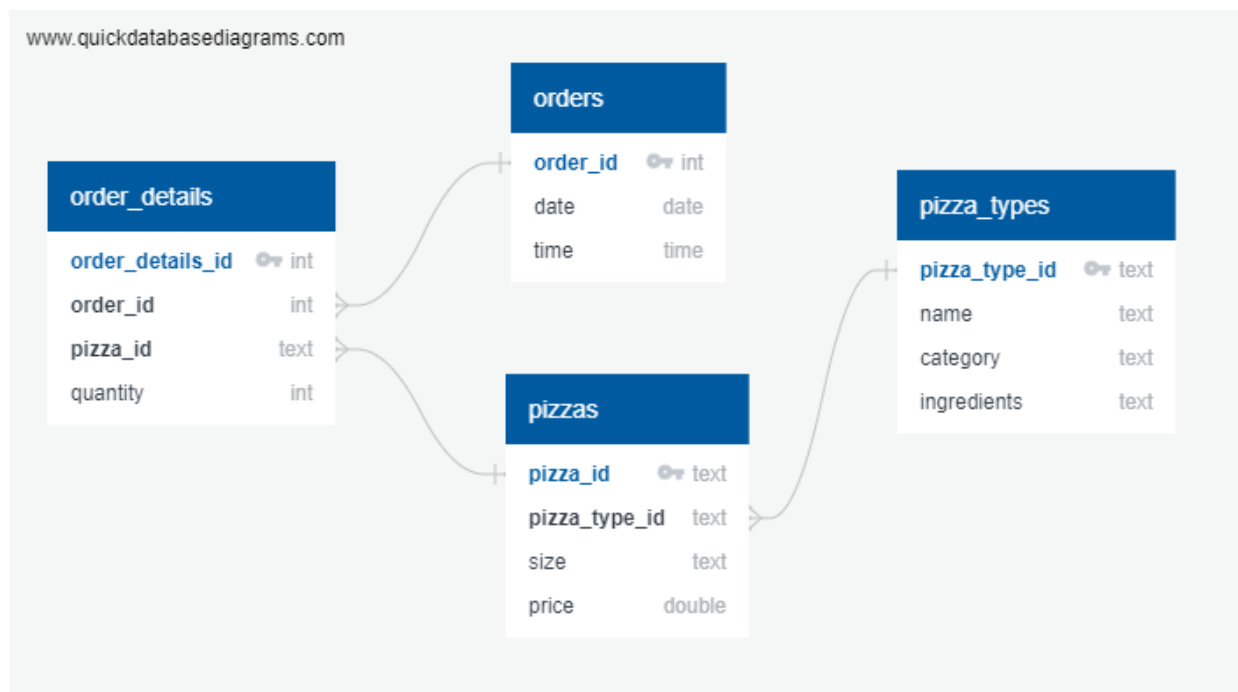- *pizza_types*: Contains information about pizza, types including name, category, and ingredients

Figure 1. ERD (Drawn by the author)

Exploratory Data Analysis

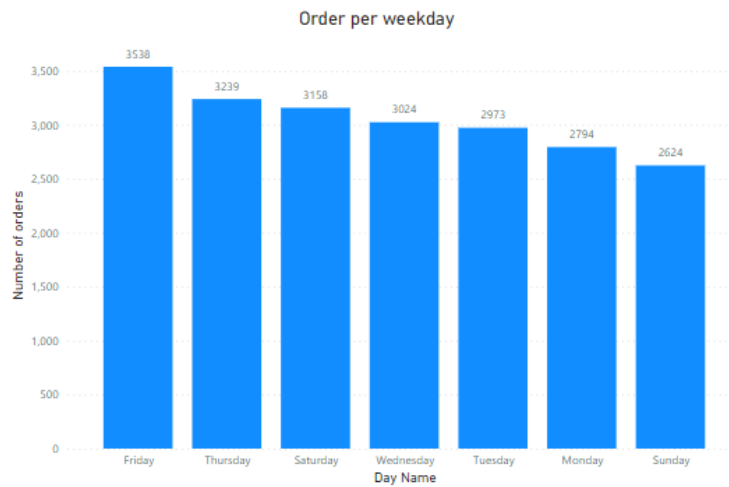**1.** How does the number of pizza orders vary throughout the week?

Figure 2. Order per weekday

- Friday has the highest number of orders (3538 orders): It seems that the weekend starts and many people choose pizza as their dining option at the end of the week
- Sunday has the lowest number of orders (2624 orders): People may prefer outdoor dining or enjoying family dinners on this day, leading to a decrease in the number of orders.
- Weekends and midweek days tend to have higher numbers of pizza orders, while the number of orders may decrease at the end of the week.

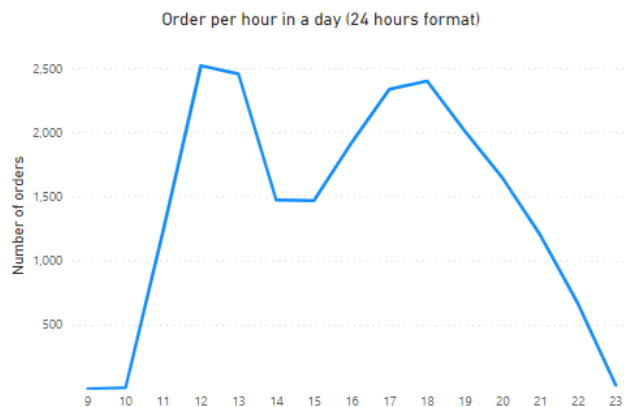**2.** What is the busiest time of the day?

Figure 3. Order per hour in a day

- The volume starts increasing from 9:00 AM, with a relatively low number of orders
- There tends to be a spike in orders around lunchtime (12:00 PM to 1:00 PM) and dinnertime (5:00 PM to 6:00 PM)
- The volume remains relatively high during the early afternoon hours (2:00 PM to 4:00 PM)
- After 8:00 PM, the volume gradually decreases, with much lower numbers of orders during the late evening.

3. How many orders are we expecting each day, each month?

The number of orders we are expecting per day is 59

The number of orders we are expecting per month is 1779

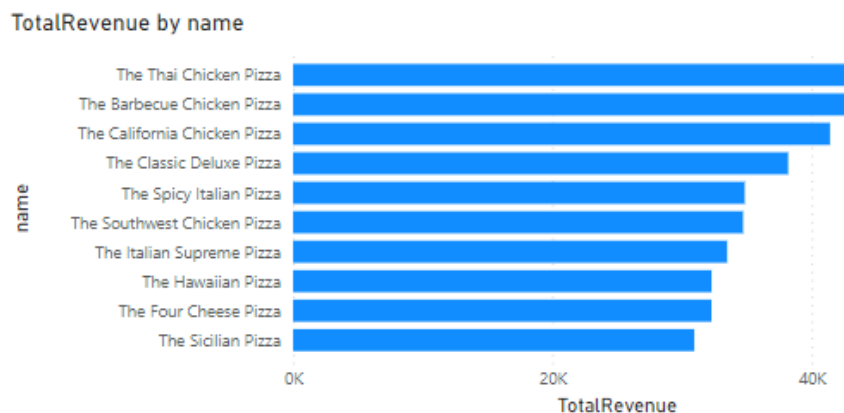**4.** What are our best and worst-selling pizzas?

Figure 4. Top 10 best selling pizzas

Based on the chart, The Thai Chicken Pizza is the best-selling pizza with a total revenue of $43434.25.
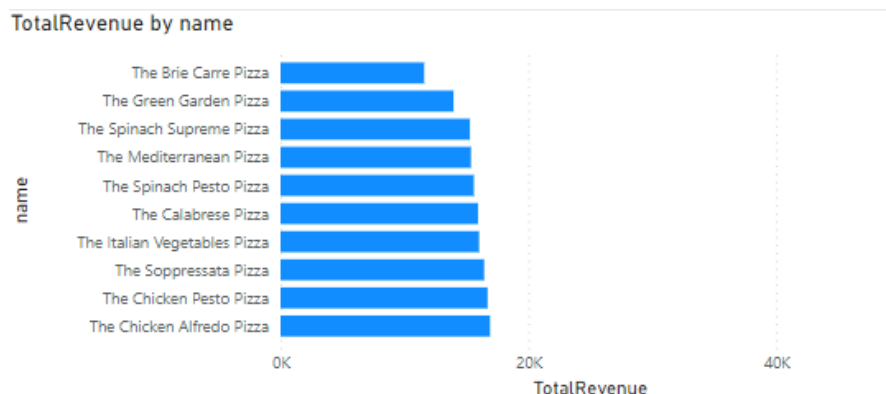

Figure 5. Top 10 worst selling pizzas

The Brie Carre Pizza is the worst selling with a total revenue of $11588.5.

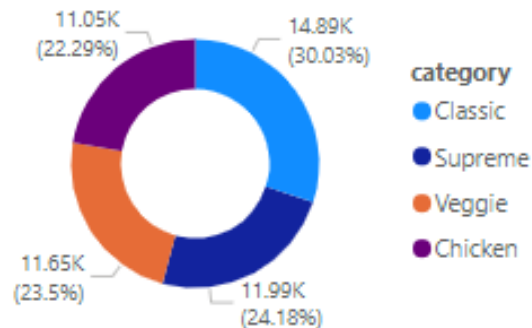5. Number of pizzas sold as per category

Figure 6. Number of pizzas sold as per category

- With 14888 orders, the Classic category has the highest number of orders among all categories
- Supreme, Veggie, and Chicken pizzas are quite close to each other with about 11k orders

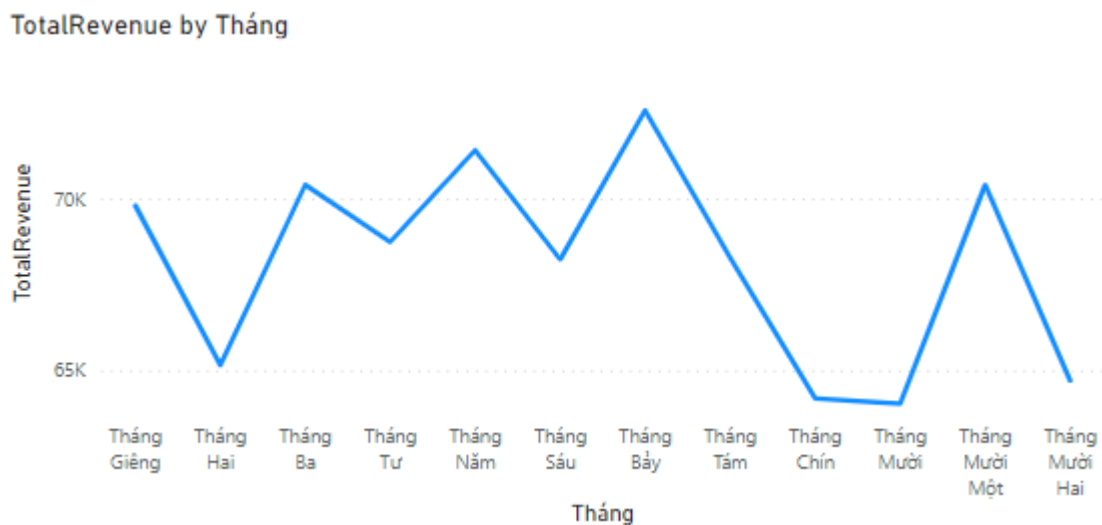6. Can we identify any seasonality in the sales?

Figure 7. Total sales in each month

- Months such as January, March, May, July, and November tend to have higher total sales compared to other months

- On the other hand, months such as January, February, September, October, and December have relatively lower total sales compared to peak months
- While there are fluctuations in sales from month to month, there is no clear seasonal pattern that repeats annually.

7. How much money did we make this year?

Total revenue in this year is $817860.05

8. What is the average order value?

The average order value is $38.31

9. Type of pizzas is best seller each month

month	pizza_type	total_sales
2015-01	The Barbecue Chicken Pizza	3770.25
2015-02	The California Chicken Pizza	3537
2015-03	The Barbecue Chicken Pizza	4049.25
2015-04	The Barbecue Chicken Pizza	3788.5
2015-05	The Barbecue Chicken Pizza	3953.5
2015-06	The California Chicken Pizza	3870.5
2015-07	The Thai Chicken Pizza	4073.75
2015-08	The California Chicken Pizza	3977.25
2015-09	The Thai Chicken Pizza	3736.25
2015-10	The Thai Chicken Pizza	3503.25
2015-11	The Barbecue Chicken Pizza	3881.75
2015-12	The Thai Chicken Pizza	3813

Table 1. Best selling pizza in each month

- The Barbecue Chicken Pizza appears to be a consistent best-seller, being the top choice in multiple months
- Other pizza types such as The California Chicken Pizza and The Thai Chicken Pizza also show strong sales performance in certain months

Conclusion

- Weekly variations indicate heightened demand on weekends and midweek days, with orders tapering off towards the end of the week

- Busiest times coincide with mealtime intervals, emphasizing preferences for pizza consumption during lunch and dinner hours

- The Thai Chicken Pizza is the best-selling pizza and The Brie Carre Pizza is the worst selling

- While the Classic category boasts the highest sales volume among all categories, none of the pizza names within the Classic category rank highest in monthly sales. Conversely, pizzas within the Chicken category consistently top the sales charts each month despite having the lowest sales volume. This indicates that the prices of pizzas within the Chicken category are higher than in other categories, resulting in higher revenue despite lower sales volume

- Despite the absence of a consistent seasonal trend, the analysis reveals substantial revenue generation throughout the year, with a notable average order value indicative of customer willingness to spend on pizza indulgence.

Recommendations

- Marketing and Promotions: Capitalize on heightened demand during weekends and midweek days by implementing targeted marketing campaigns and promotions during these periods to attract more customers and increase sales

- Review pricing structures, particularly within the Chicken category, to align with customer preferences and maximize revenue. Adjusting prices to reflect the popularity of chicken-based pizzas despite their lower sales volume can help optimize profitability

- While there are no evident seasonal patterns, it's advisable to introduce seasonal promotions or temporary discounts to take advantage of fluctuations in consumer behavior throughout the year. This approach can boost sales during quieter periods and sustain revenue growth.