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Project: Pizza Restaurant

Prompt: I am looking to open a pizza restaurant. What suggestions do you have for success?

Section 1: Introduction

As we embark on the journey of opening a pizza restaurant, it is crucial to identify the challenges and reframe our question to focus on building a successful establishment. In order to tackle this task effectively, we must first understand the key problems that need to be addressed. These challenges encompass areas such as franchising opportunities, ensuring longevity in a competitive market, maximizing profitability, and gaining popularity among customers. To overcome these obstacles, we need to acquire essential knowledge and explore various business models that can pave the way to success. By analyzing these factors, we can devise suggestions and solutions to establish a thriving and prosperous pizza restaurant.

Section 2: What do we need to know?

In our pursuit of success in the pizza industry, we have identified longevity, profitability, and popularity as the key principles to focus on. Before delving into data analysis, it is essential to define the business models that align with these principles. While popularity requires further exploration, we can begin by defining the profitability business model. To assess profitability, we need to examine the revenue sources and expenses associated with our pizza restaurant, as illustrated in Chart 1. The potential revenue streams include pizza sales, various pizza types, as well as additional offerings such as salads and wings. On the other hand, expenses can be classified into two categories: fixed costs and variable costs, as depicted in Chart 2. Under fixed costs, we must consider expenditures related to building infrastructure and equipment, which are prerequisites for operating the pizza business. Variable costs, on the other hand, encompass

expenses associated with employees, vendors, and suppliers. By clearly defining our business models and understanding the key factors to consider, we can proceed to gather and analyze the relevant data that will support our strategic decisions.

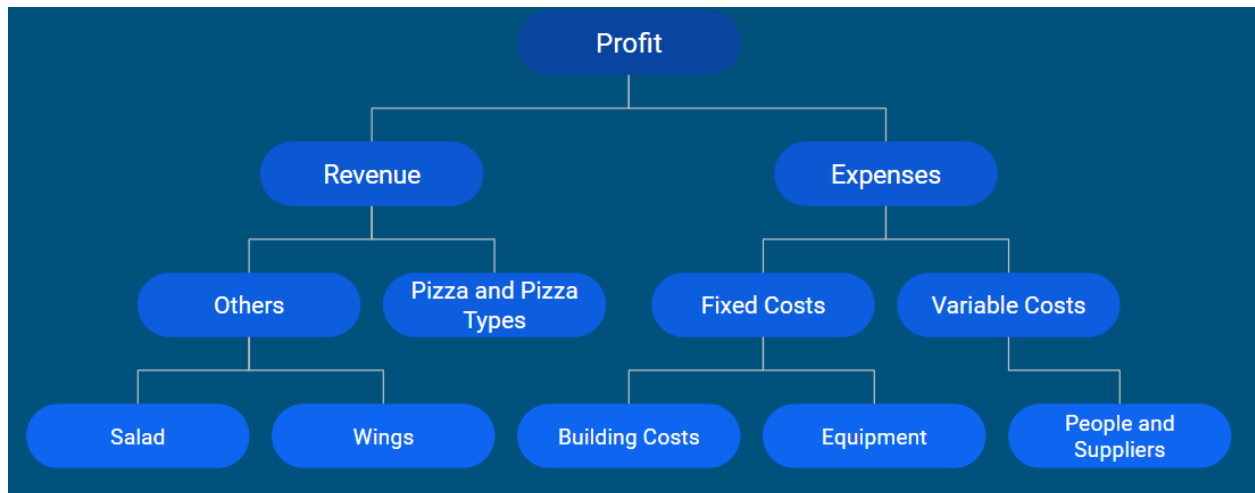


Chart 1: Profit Business Model

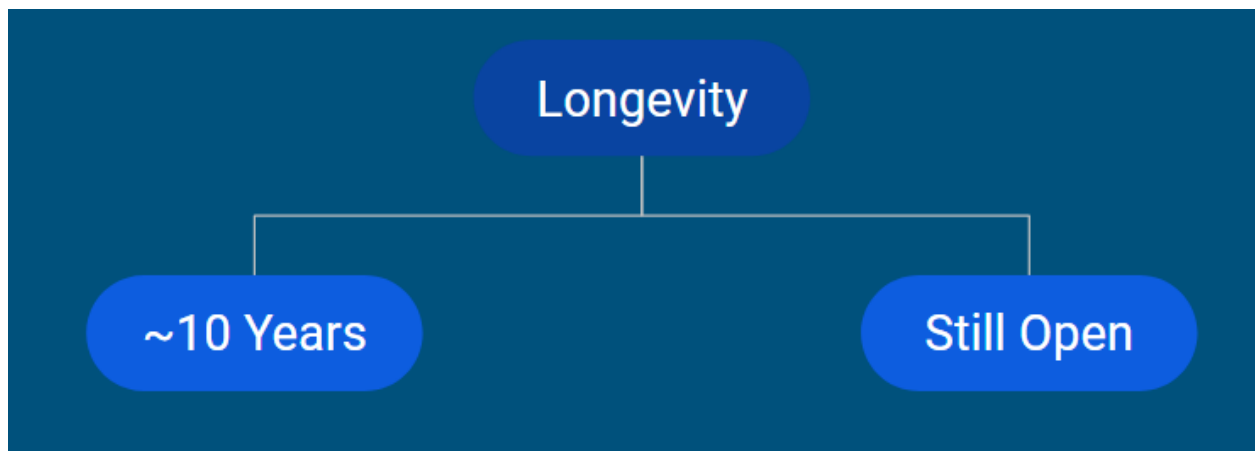


Chart 2: Longevity Business Model

Section 3: What data do we have available?

To support our analysis, we need to extract relevant information from the SQL database which comprises four distinct databases dedicated to managing pizza restaurant operations. These databases are responsible for storing information related to pizza order details, pizza orders, pizza prices, and pizza types. We need to break down the data to understand the contents

of each database. The first database, `pizza_order_details`, consists of columns of `order_details_id`, `order_id`, `pizza_id`, and `quantity`. The second database, `pizza_orders`, consists of columns of `order_id`, `date`, and `time`. The third database, `pizza_prices`, consists of columns of `pizza_id`, `pizza_type_id`, `size`, and `price`. The fourth database, `pizza_types`, consists of columns of `pizza_type_id`, `name`, `category`, and `ingredients`. In table 3, we can see how the databases are all connected by displaying an ERD model. By knowing where we can collect our information, we can start to dive into the data and see what we can use to support the business models.

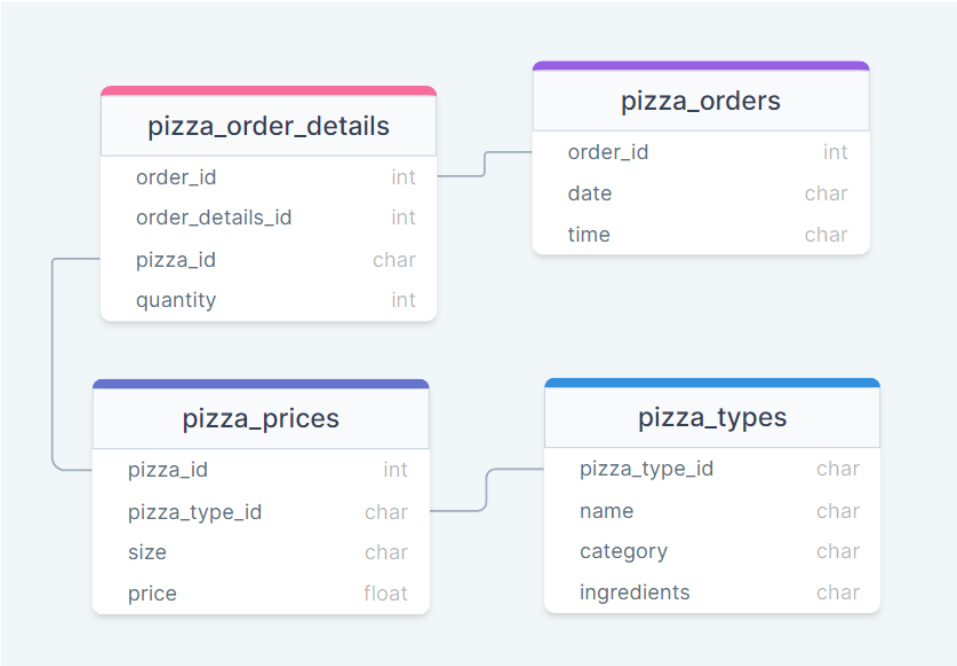


Table 3: ERD Model

Section 4: Organizing the Data

Opportunity 1: Market Demand for Size Large Pizzas

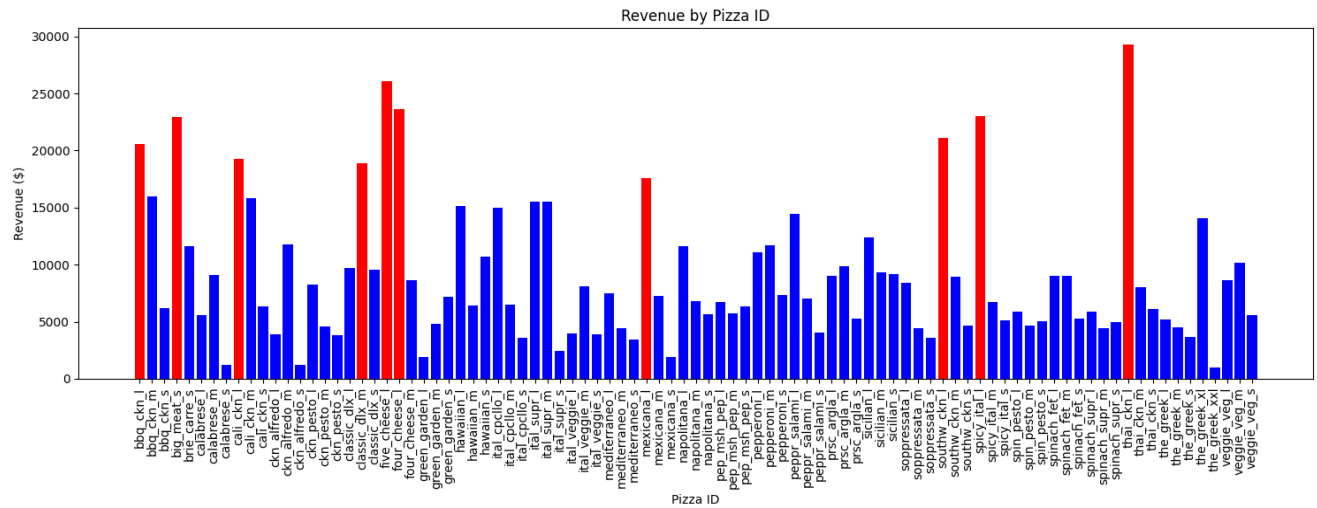


Figure 2: Top Revenue by Unique Pizza ID

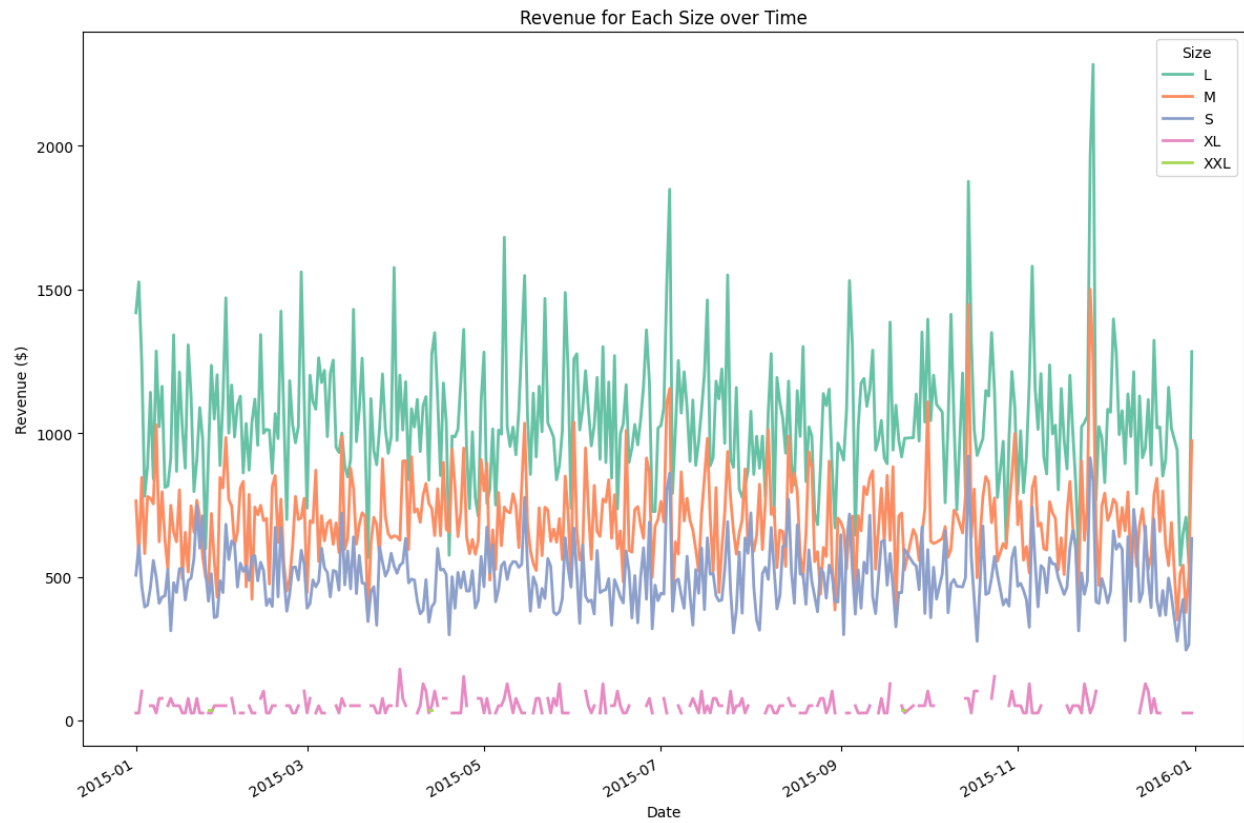


Figure 3: Pizza Size Revenue throughout the Year

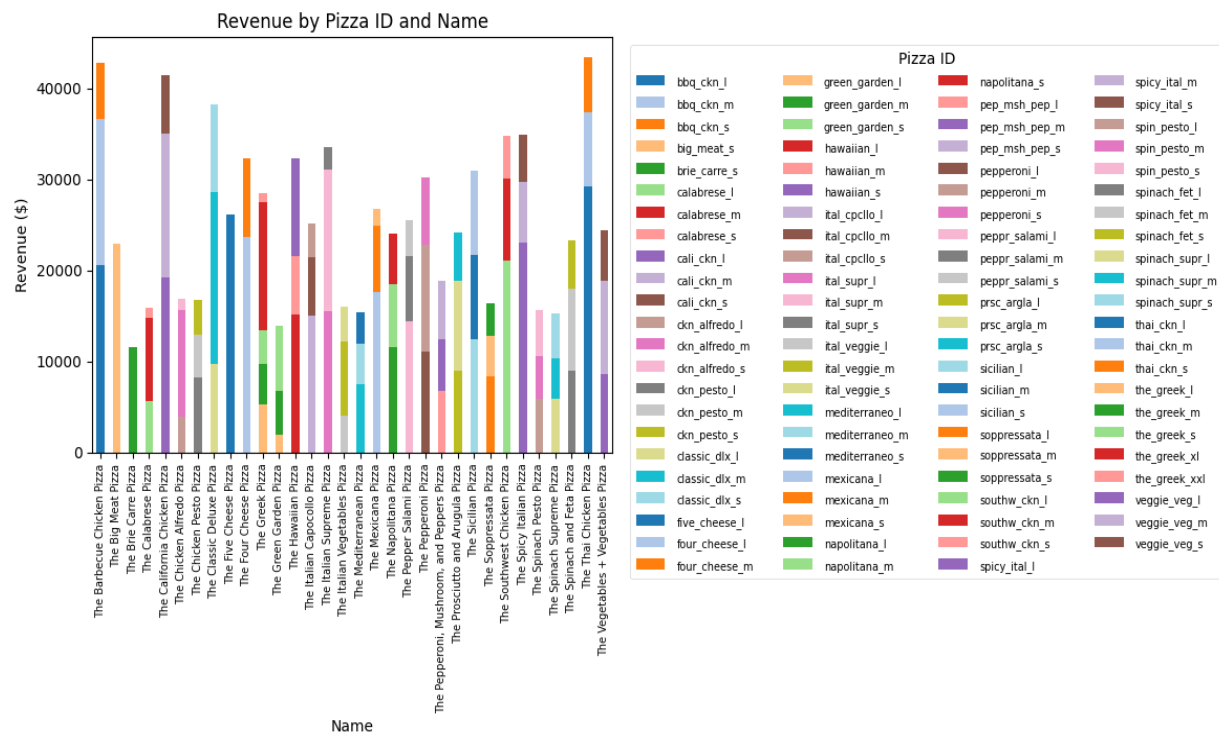


Figure 4. Pizza ID Revenue Contribution Under Pizza Name

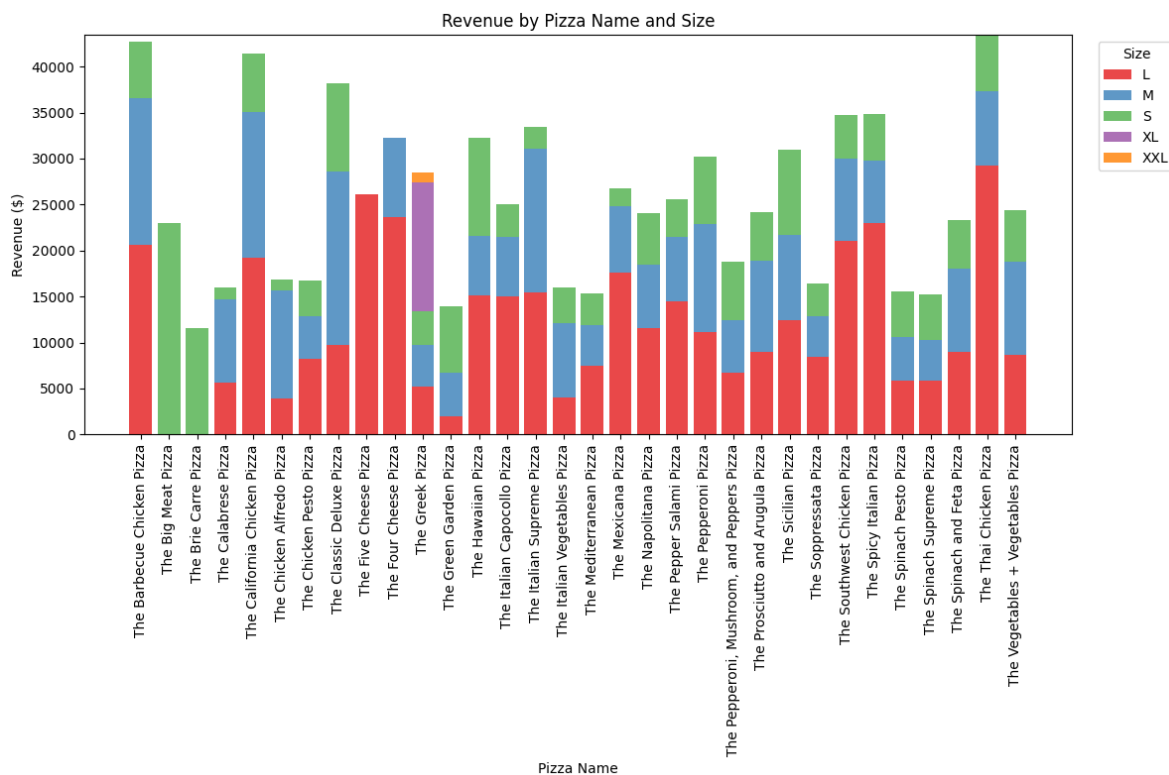


Figure 5: Pizza Size Revenue Contributions Under Pizza Name

Opportunity 2: Ingredients Efficiency

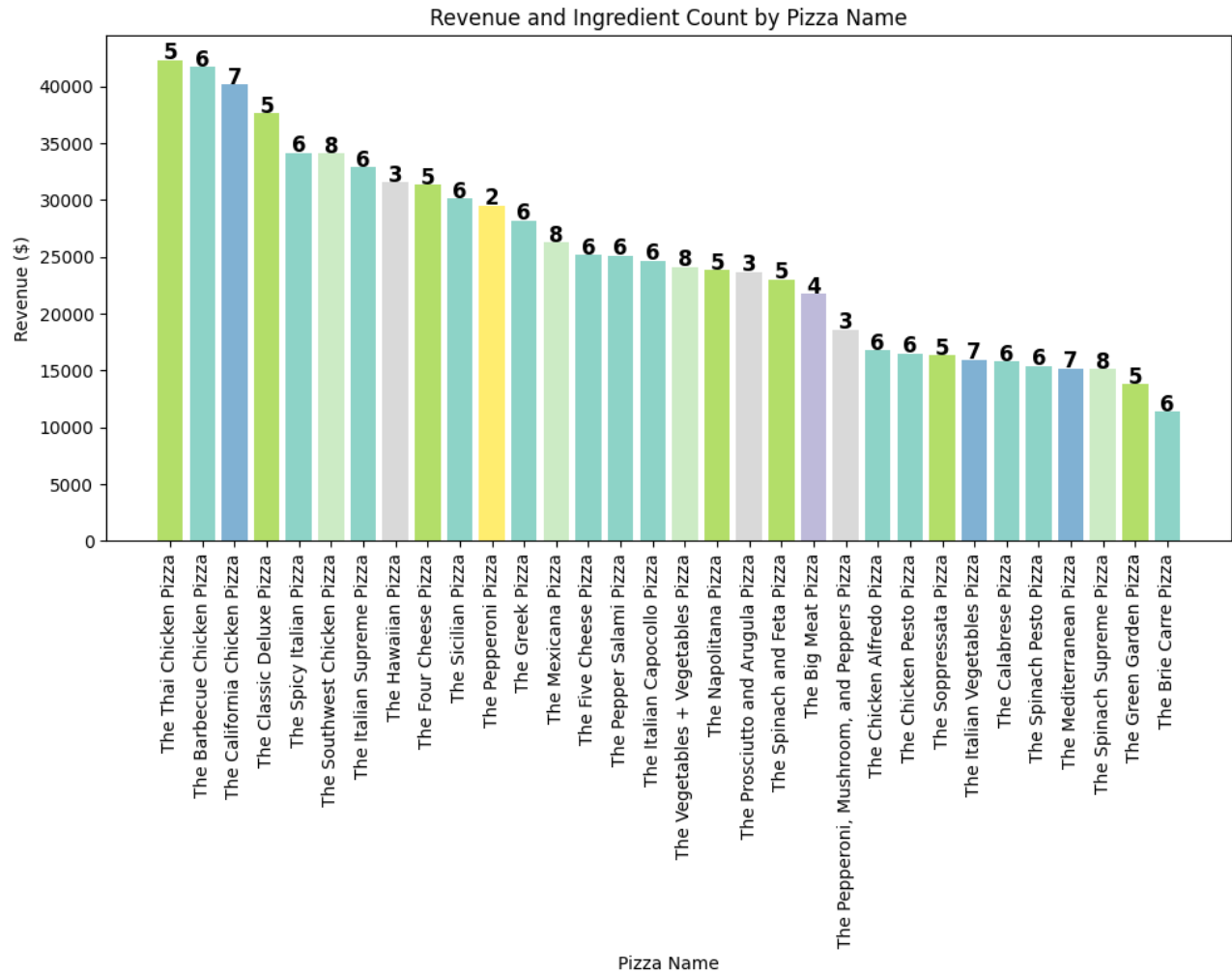


Figure 6. Ingredient Count for Pizza Name

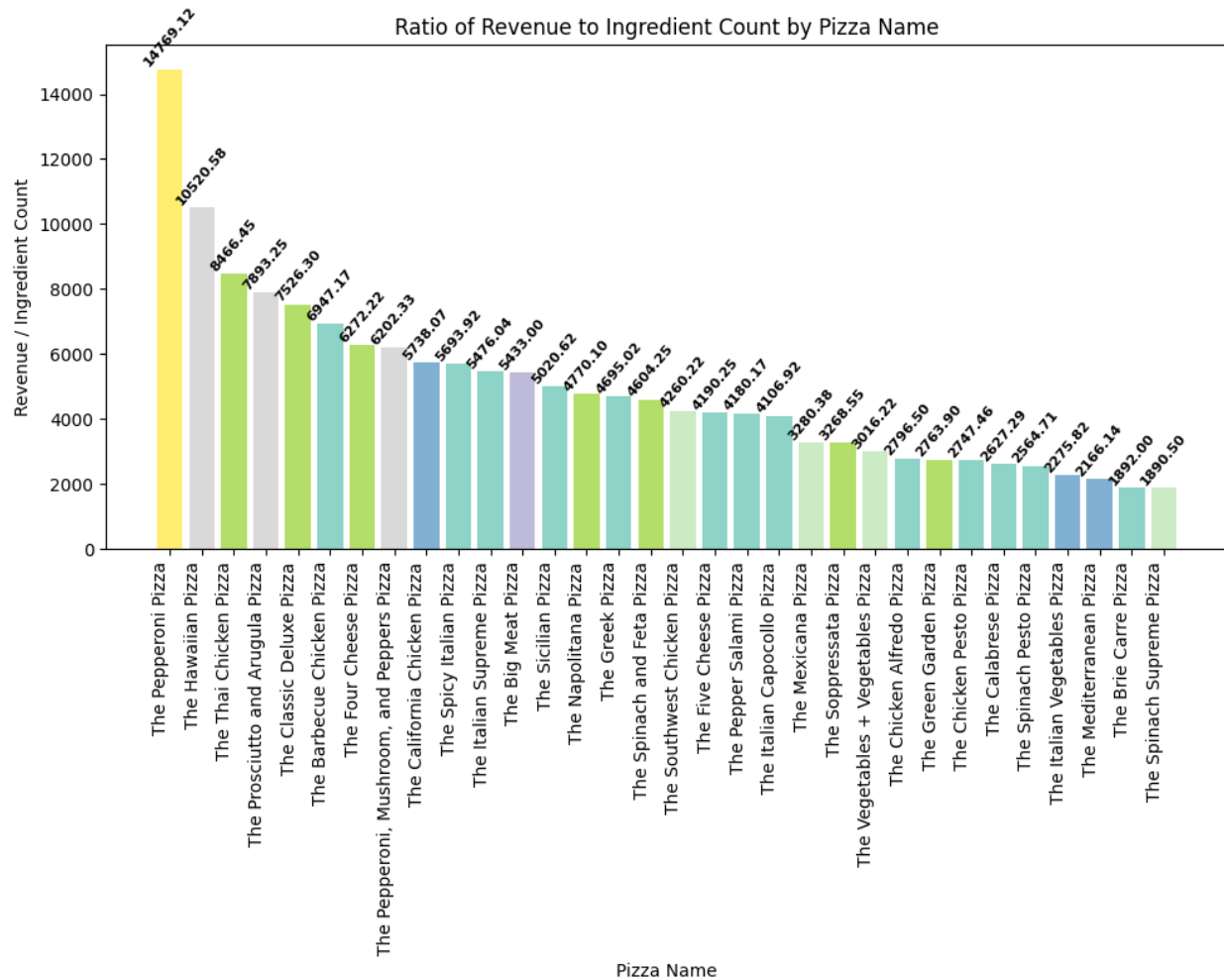


Figure 7. Ratio between Revenue and Ingredient Count

Opportunity 3: Best-Selling Pizza throughout the Year

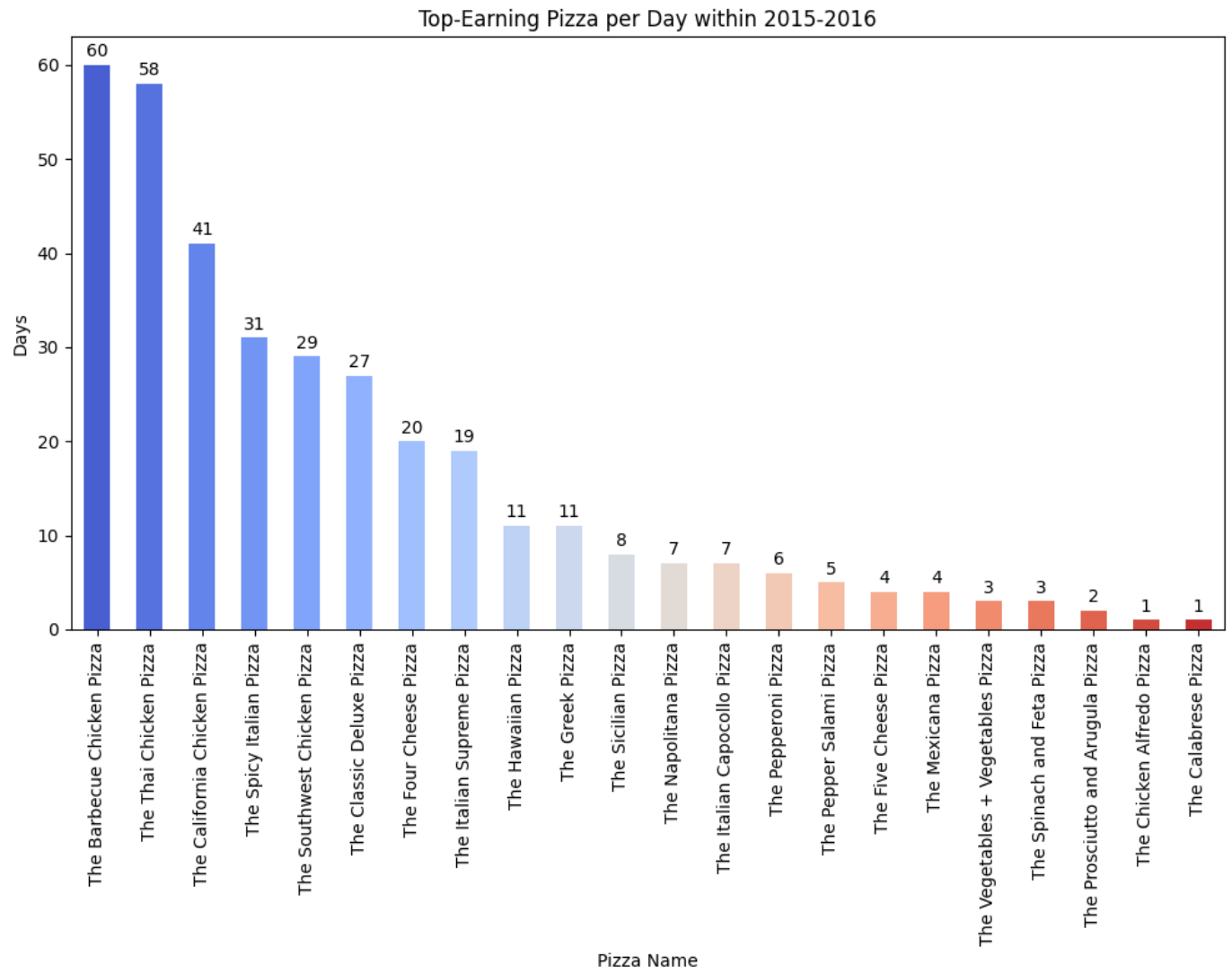


Figure 8. Top-Earning Pizza Count (2015-2016)

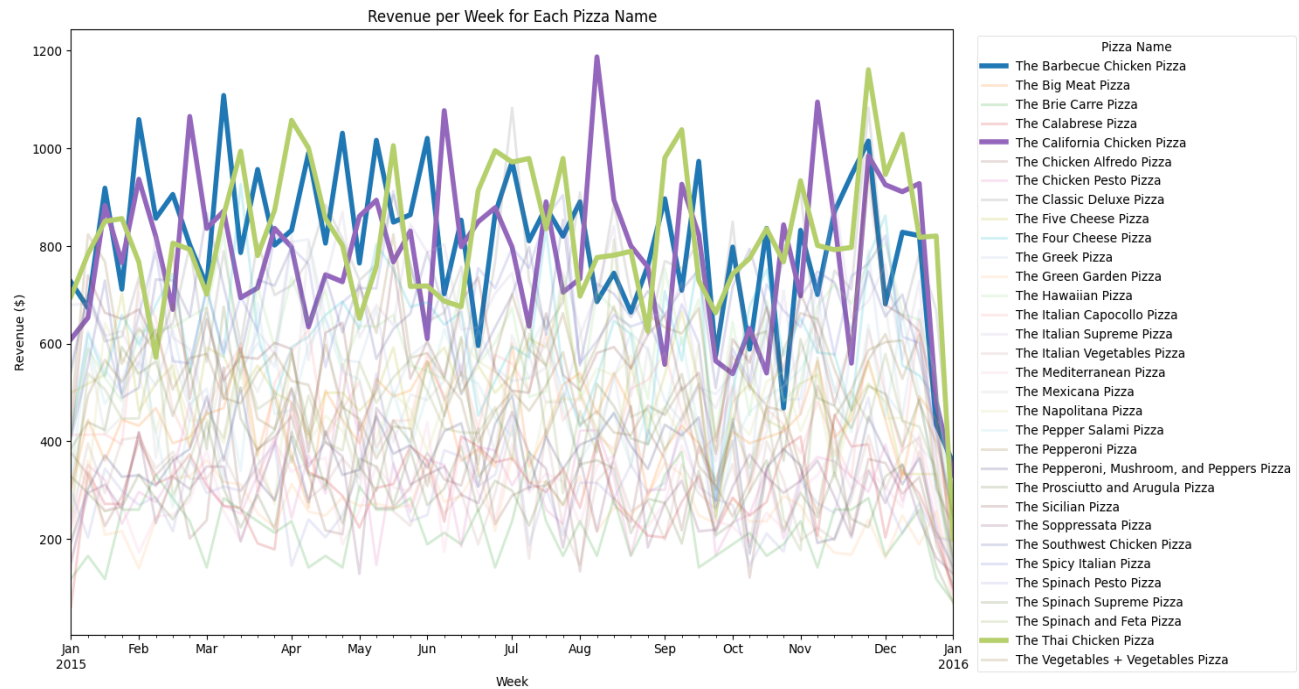


Figure 9. Trend of Pizza Revenue per Week

Section 5: Conclusion and Recommendations

In conclusion, to increase profitability based on the data analysis we need to concentrate on quantity, timing and pizza ingredients. Each method serves a purpose as shown from our results. The first opportunity suggests keeping the market demand for large pizzas. As shown in figure 1. We use data to compare the revenue that each pizza type has made. The data presents that out of the top 10 highest revenue pizzas in size, 9 of them are size large as it is generating over \$20,000 of revenue. Using figure 1, the data shows how each pizza ID has its revenue contribution. If you combine the pizza ids together, the majority is generating revenue by the large size. For example, Barbecue Chicken pizza is generating over \$40,000 and most profits come from the large size. Even when comparing it to the Mexicana pizza that is generating less at under \$30,000, the large pies are still being sold the most compared to the small and medium

sizes. Even though we know the large size pizzas do sell well, we need to recommend large size to other pizzas as well. Looking at figure 5, we can see that some of the pizzas do not have large sizes so we need to expand upon large size pizzas to other pizzas to keep it available.

The second opportunity suggests having ingredient efficiency. Using Figure 6, we count the ingredients for each Pizza Name. The data suggests that the ingredient count for the most profitable revenue is at 5 ingredients for the Thai Chicken pizza. Similarly the Barbecue Chicken pizza is at 6 ingredients. If you compare it to higher pizza ingredients such as 8 ingredient count, like the Spinach Supreme pizza and the Vegetables + Vegetables pizza, they are generating less than \$25,000. However, if we look at figure 8, we can see that we can not rely on the revenue alone. As we can see in figure 7, we can see how the ratio of each pizza with the ingredient counts. We can see the top 2 highest ratio as pepperoni pizza and hawaiian pizza as they do contain the least amount of ingredients. With this, we need to keep in check on how much ingredients can be compared with the revenue.

The third opportunity suggests analyzing the Best-Selling Pizza throughout the Year. Using a data timeframe from 2015 -2016, we measure the Top-Earning Pizza Count per day throughout the year. The data presents the top earning pizzas are Barbecue Chicken at 60 being sold each day, and The Thai Chicken pizza being sold 68 per day. Similarly we used the data to find the Trend of Pizza Revenue per Week. Using figure 9, the highest top 3 average pizza weekly revenues are highlighted, mentioning the Barbecue Chicken pizza, the California Chicken pizza, the Thai Chicken pizza. With this, we should focus on the popular pizza that sells the most revenue and keep it on a consistent basis on the menu.

From our data we learned that our top selling pizza is Barbeque Chicken pizza. It is favorable because it doesn't have the highest count of ingredients, and it was recorded to be the

highest selling pizza by day and week for a year. By identifying the highest generated revenue pies the business can support then we can suggest that they keep those pies on the menu.

Typically, a business that consistently excels during high-demand periods has the potential to earn favorable reviews and recommendations from customers. If we keep up the business models then we can result in greater customer loyalty and new business prospects for the company. All of these methods are used in order to reach our goal of maximizing profitability and maintaining longevity for our pizza business to be successful.