**Case Study: Statistical Analysis on Pizza Price Dataset**

**Objective:** The objective of this case study is to perform statistical analysis. In this exercise, you'll be working with a dataset containing information on several pizza companies, including their pizza names, types, sizes, and prices. Your task is to analyze this dataset by explaining basic statistical techniques like mean, median, mode, correlation, causality and hypothesis testing.

**Dataset Description:**

* Company: Name of the pizza company.
* Pizza Name: Name of the pizza offered by the company.
* Type: Type of pizza (e.g., Margherita, Pepperoni, Veggie Supreme, etc.).
* Size: Size of the pizza (e.g., Small, Medium, Large).
* Price: Price of the pizza.

**Questions:**

**1.Descriptive Statistics:**

**a. Variation in Pizza Prices**: How do pizza prices vary? Are there specific factors (such as ingredients, size, or brand) that contribute to these variations?

**Answer:** Pizza prices vary based on factors like pizza type, size, and brand. Specialty pizzas, larger sizes like jumbo, and brands like Godfather’s Pizza tend to have higher average prices due to factors such as unique ingredients, increased production costs, and brand reputation.

**b. Impact of Market Trends**: How do changes in consumer preferences or food trends affect pizza prices?

**Answer:** Changes in consumer preferences, like the demand for gluten-free pizza, directly affect pizza prices. As the popularity of specific options rises, production costs increase, leading to higher prices for those pizzas.

**C. Competitive Strategies**: How do pizza companies strategically set their prices to attract customers?

**Answer:** Pizza companies strategically set prices by aligning with competitors and offering deals like buy-one-get-one-free promotions and coupons to attract customers

**d. Consumer Preferences**: What factors influence the popularity of specific pizza sizes?

**Answer:** Factors influencing the popularity of specific pizza sizes include consumer preferences, value perception, and pricing strategies**.**

**e.** **Pricing Strategies**: How do pizza companies strategically price different sizes? Is there a correlation between size and price, and how does this impact consumer decisions?

**Answer:** Pizza companies strategically price different sizes with a correlation between size and price, usually increasing accordingly. This strategy satisfies consumers by ensuring proportional sizes of pizza for their money  
  
f. **Marketing and Portion Perception**: How do marketing efforts affect our perception of pizza sizes? For instance, do creative names (like “large” or “family-size”) influence our choices?

**Answer:** Creative names like "large" or "family-size" influence our perception of pizza sizes. Users may believe that one large pizza is sufficient for three people, while a "family size" pizza seems appropriate for a small family, despite minimal differences in actual size.

**2.Company Comparison:**  
  
a. How does competition impact pizza pricing? Are there instances where companies adjust their prices to gain a competitive edge? What role does consumer demand play in this dynamic?

**Answer:** Competition affects pizza prices. Companies change prices to compete, sometimes by offering discounts. They consider what customers want when setting prices.

c. **Consumer Perception and Value Proposition**: How do consumers perceive pizza prices? Is there a correlation between price and perceived quality? For instance, do customers associate higher prices with better ingredients or taste?

**Answer:** People think higher pizza prices mean better quality. But it depends on personal taste and the brand.

d. What value proposition do pizza companies offer to justify their prices? Is it about convenience, taste, portion size, or something else? How do marketing efforts communicate this value to consumers?

**Answer:** Pizza companies explain why their pizzas cost what they do. They might talk about fast delivery or fresh ingredients in their marketing to show why their prices are fair.

3. **Global Trends and Local Adaptations:**

**a. Market Segmentation**: How do pizza companies segment their market based on pricing? Are there specific customer segments (e.g., budget-conscious, gourmet seekers) that each company targets?

**Answer:** Pizza companies segment their market based on pricing to target different customer groups like budget-conscious or gourmet seekers. **3.Pizza Type Analysis:**

**a.** **Flavor Trends and Adaptations**: How do pizza companies adapt their offerings to changing flavor trends?

**Answer:** Pizza companies adapt to changing flavor trends by introducing new ingredients and flavors. And also consumer wants and like.

**b.** **Regional Variations**: How does the average pizza price differ across cities or states? Are there specific regions where certain types of pizza being more expensive due to local preferences or availability of ingredients?

**Answer:** Pizza prices vary across cities or states due to local preferences and ingredient costs. Certain regions may have higher prices for specific types of pizza.  
  
**4.Size Preference Analysis:**

Explore whether there's any relationship between the size of the pizza and its price. Explain correlation analysis.

**Answer:** The relationship between the size of a pizza and its price is typically positive, meaning that as the size of the pizza increases, the price also tends to increase. This positive correlation suggests that larger pizzas generally cost more than smaller ones.

**5.Company Performance:**

**a.** Rank the companies based on their average pizza prices.

**Answer:** Godfather's Pizza

IMO's Pizza

Domino's Pizza

Pizza Hut

**b.** Is there any association between the size of the company (number of stores or revenue) and the average price of their pizzas?

**Answer:** There is no association between the size of the company and the average price of pizza. There may be some other factors such as ingredients or brand name.

**6.Consumer Behavior Analysis:**

**a.** Investigate if there's any correlation between the popularity of a pizza type and its price.

**Answer:**  there is no correlation between the popularity of a pizza type and its price.

Because the average price of cheese pizza and classic recipe pizza is 11 and 13 but cheese pizza is very less popular than classic recipe pizza cheese pizza count is 16 and classic recipe pizza count is 90.

**b.** How might the company leverage this information to improve their pricing strategy?

Please ensure you provide clear explanations of your findings and any assumptions made during your analysis.

**Answer:** To improve pricing strategy, adjust prices based on pizza popularity, offer competitive rates for popular pizzas, and consider promotions for less popular options  
  
**7. Causality**

**a. Impact of Ingredients on Price:** Does the inclusion of premium ingredients (such as imported cheeses or organic vegetables) directly influence the higher price of certain pizza types?

**Answer:** Premium ingredients like imported cheeses or organic vegetables directly raise the price of certain pizzas. These ingredients cost more to use, so pizzas with them are priced higher.  
  
**b.** **Marketing and Consumer Preferences** How does marketing (e.g., advertising

campaigns, menu descriptions) impact the popularity of specific pizza types? Is there a causal relationship between effective marketing and increased consumer demand for certain pizzas?

**Answer:** Marketing, including advertising campaigns and menu descriptions, significantly impacts the popularity of specific pizza types. Effective marketing creates consumer awareness and desire for certain pizzas, leading to increased demand. Therefore, there is a causal relationship between effective marketing and increased consumer demand for certain pizzas. For example, if a new pizza is introduced but not promoted, fewer people may buy it. However, promoting the pizza increases its visibility and likelihood of purchase.

**Good luck!**