You are the regional marketing vice president overseeing all US marketing for an international pharmaceutical distributor.  Your team has recently submitted a proposed budget for advertising and marketing spend for the upcoming year to support 10% annual revenue growth for your company’s best-selling product Dilomatox.  A summary of that budget along with this year’s forecasted data (forecasted since your fiscal year isn’t quite complete yet) is below:

**DILOMATOX – Proposed Marketing Budget**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Proposed Budget (Next Year) | Current Forecast (This Year) | % Change |
| Advertising and Marketing Spend (total) | $64,250,000 | $56,860,000 | +13% |
| Product Revenue | $1,164,471,000 | $1,058,610,000 | +10% |
| Marketing Spend as % of Revenue | 5.52% | 5.37% |  |

Your senior budgeting committee reviews your budget and the CFO sends you a summary of her team’s findings, a week ahead of your budgeting meeting with the CEO.  The CFO explains to you she will not support your proposed budget increase, because your main competitor Zoraffil is forecasted to spend 8.5% less on advertising and marketing spend but is on target to earn 7.5% more revenue.  Furthermore, she has recommended your budget be reduced to 4.57% of revenue to match what Zoraffil has achieved.  To meet this goal, she has asked you to reduce your proposed budget by $11 million before next week’s meeting with the CEO.  Your team has already begun identifying which marketing and advertising programs it would choose to cut.

**CURRENT YEAR FINANCIAL FORECASTS**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Dilomatox | Zoraffil | % Change |
| Advertising and Marketing Spend (total) | $56,860,000 | $52,040,000 | -8.5% |
| Product Revenue | $1,058,610,000 | $1,138,510,000 | +7.5% |
| Marketing Spend as % of Revenue | 5.37% | 4.57% |  |

To support their findings, the committee has supplied your team with the attached data file, providing weekly marketing spend and revenue (in millions of dollars) for the last 52 weeks for both brands.

Your task is to analyze this data, ‘uncover the story’ behind how advertising spend and revenue for these brands are related (or not!), and to write a ***managerial summary*** that you can use to justify your proposed advertising and marketing budget.  You should organize your summary in a way that provides a strong and coherent argument, but in that argument your analysis should answer all of the following questions:

1. Describe the relationship between advertising and revenue for Dilomatox. Would you characterize these relationships as strong or weak?

Support your response with relevant graphs and statistics.

1. Describe the relationship between advertising and revenue for Zoraffil. Would you characterize these relationships as strong or weak?

Support your response with relevant graphs and statistics.

1. Analyze the multivariate relationship between Dilomatox’s revenue and the other variables provided (Dilomatox’s marketing spend, Zoraffil’s revenue, and Zorafill’s marketing spend). Is there a significant relationship between Dilomatox’s sales and any (or all) of these variables?

Support your response with relevant charts or statistics.

1. What percent of the variation in revenue does advertising and marketing spend explain for both brands? Explain.

1. Based on your analysis, if both brands ceased all advertising and marketing spend, how much revenue would be lost? Explain.

1. What impact will the CFO’s proposed $11 million dollar cut to your budget have on Dilomatox revenue next year?

Your managerial summary should include a description of the statistical tests or processes used to answer each question, explanation of the necessary results (appropriate descriptive or graphical summaries, statistics like r-values and least-squares regression equations, predicted values -- and if appropriate estimates of error for any parameters or predictions made). It should also show that any required assumptions for any statistical procedures used are valid.  Use a 95% level of significance for any statistical tests.