

Python Regression Based Analysis

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Background

After three years serving customers across the San Francisco Bay Area, the executives at Apprentice Chef have come to realize that over 90% of their revenue comes from customers that have been ordering meal sets for 12 months or less. Given this information, they would like to better understand how much revenue to expect from each customer within their first year of orders. Thus, they have hired you on a full-time contract to analyze their data, develop your top insights, and build a machine learning model to predict revenue over the first year of each customer's life cycle.

Executive Summary

The actionable recommendation for the Apprentice Chef Company is to encourage customers to watch more meal preparation videos.

Recommendations for implementation:

- Generate meal prep videos designed to increase customer engagement.
- Generate marketing campaigns to promote meal prep videos.
- Inform customers about new meal prep video releases.

Assignment Requirements:

Build a regression-based predictive model, present my 2 best insights, make one actionable recommendations and show my highest R-squared.

Methodology

I have been provided a dataset containing information about a meal delivery service, I have used the revenue variable as the response variable to build my Ordinary Least Squared Model. After performing a Regression Based Analysis, my best insight is that the variable Avg Preparation Video Time has the highest positive correlation with revenue. My second-best insight is that Avg Clicks per Visit has the highest negative correlation with revenue.

Response Variable: REVENUE

Click the link to view Python Code: <https://juanduranc.github.io/sites/Python%20RegressionAnalysis.html>

Insights

Insight #1: Customers who spend more time watching video instructions are more likely to bring a higher revenue to the company compared to the ones who watch fewer videos.

AVG PREPARATION VIDEO TIME is the strongest indicator that a customer will bring higher revenue. The scatterplot in chart#1 displays a positive slope as a trendline. This chart contains outliers which are far away from the trendline. By removing these few outliers, the correlations between Revenue and video time increases.

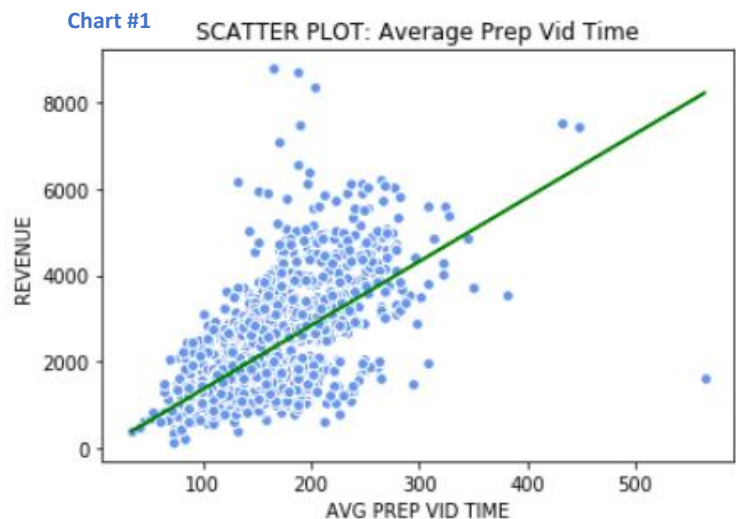
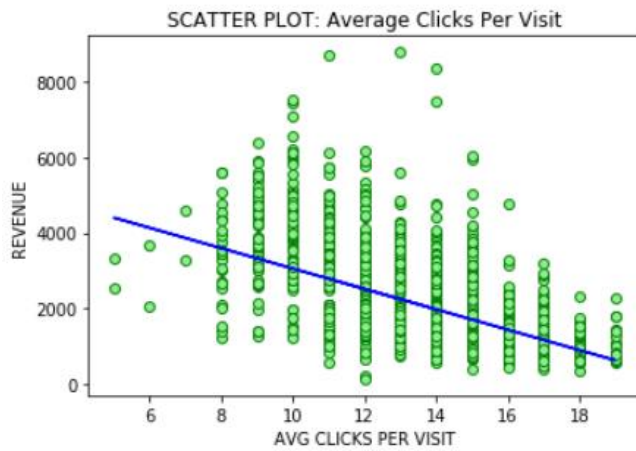


Chart #2



Insight #2: Customers who perform too many clicks per visit are expected to bring lower revenue for the company. AVG_CLICKS_PER_VISIT has a negative correlation with revenue. This can be seen in chart#2 with the blue trend line. The more clicks a customer performs, the less revenue they are expected to bring for the company.

Chart #3 shows in detail where is the highest revenue/customer and the greatest number of customers by using average clicks per visit as reference.

Chart #3

| Average Revenue | AVG_CLICKS_PER_VISIT | #Customers |
|-----------------|----------------------|------------|
| 2940.0 | 5 | 2 |
| 2869.0 | 6 | 2 |
| 3950.0 | 7 | 2 |
| 3429.0 | 8 | 27 |
| 3975.0 | 9 | 64 |
| 3925.0 | 10 | 92 |
| 2663.0 | 11 | 175 |
| 2228.0 | 12 | 267 |
| 2089.0 | 13 | 358 |
| 1935.0 | 14 | 312 |
| 1752.0 | 15 | 250 |
| 1379.0 | 16 | 169 |
| 1327.0 | 17 | 148 |
| 1207.0 | 18 | 64 |
| 1162.0 | 19 | 14 |

Customers are grouped by average clicks per visit. The revenue in this chart displays the mean revenue by each group of clicks per visit.

Customers who click the least bring in more revenue. This might be because they already know the products or because they are

Based on clicks per visit, most customers click between 11 and 16 times. If the website had less options, customers would proceed to buy instead of making more clicks. Further analysis is required to understand this behavior.

Recommendations for Business Implementation

The actionable recommendation for the Apprentice Chef Company is to encourage customers to watch more meal preparation videos. This can be accomplished by designing appealing videos to increase customer engagement.

An attractive video has plenty of light, a clean background, and a professional appeal, (Bedrina, 2018). To grab a customer's attention, videos can have snappy titles and be relatable to customers, (Sprout Video, 2017). Other strategies include allowing a questions & answers segment and interacting with customers. (Hoot Suite, 2019)

Another way to get more views from customers & potential customers is by generating marketing campaigns to promote the meal prep videos. A few good strategies to create a successful marketing campaign include: Email Marketing, Search engine optimization and paid advertising. (Fresh Sparks, 2019)

The last business recommendation is to continuously monitor the results of implementation. The key performance indicators for this implementation are average prep video time and revenue. It is necessary to measure if there has been an increase in meal prep video time and determine if there is still a strong positive correlation between meal prep video time and revenue. Monitoring KPIs improves decision making and allows to track progress towards goals. (Sousa, 2012)

Highest R squared

Highest R squared = 0.787.

Conclusion

The best linear model for the regression-based analysis is the Boosting Regressor, and the most significant variables are shown in the following list:

```
List_variables = ['out1_EMAIL_DOMAIN',  
                  'AVG_PREP_VID_TIME',  
                  'AVG_CLICKS_PER_VISIT',  
                  'MEDIAN_MEAL_RATING',  
                  'MASTER_CLASSES_ATTENDED',  
                  'TOTAL_MEALS_ORDERED',  
                  'CONTACTS_W_CUSTOMER_SERVICE',  
                  'UNIQUE_MEALS_PURCH']
```

Boosting Regressor performance:

Train Score = 0.9230

Test Score = 0.8762

Difference = -0.0468

Works Cited

Bedrina, O. (2018). *12 Simple Tips for Making Your Videos Look More Professional*. Retrieved from Weve.Video:
<https://wave.video/blog/12-simple-tips-for-making-your-videos-look-more-professional/>

Fresh Sparks. (2019, 12 17). *11 Simple Steps for a Successful Brand Building Process*. Retrieved from Fresh Sparks:
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Hoot Suite. (2019, 03 18). *23 Smart Ways to Promote Your YouTube Channel*. Retrieved from Hoot Suite:
<https://blog.hootsuite.com/how-to-promote-your-youtube-channel/>

Sousa, P. D. (2012, 08 31). *The 5 notable benefits of KPI reporting*. Retrieved from Simple KPI:
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