Course Case: Apprentice Chef

- DAT5303 - **Machine Learning**
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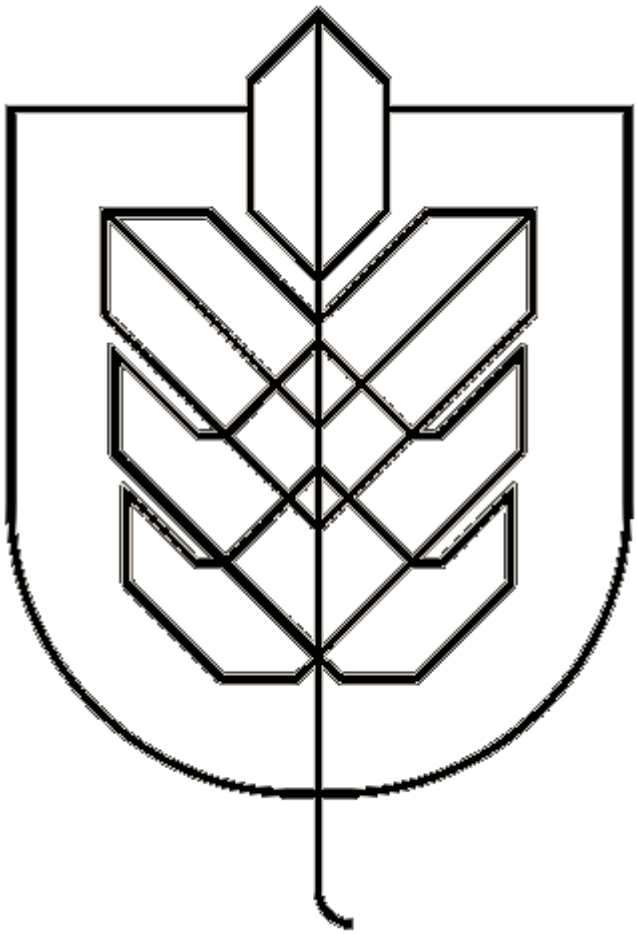


Background

Apprentice Chef, Inc. is an innovative company with a unique spin on cooking at home. Developed for the busy professional that has little to no skills in the kitchen, they offer a wide selection of daily-prepared gourmet meals delivered directly to your door. Each meal set takes at most 30 minutes to finish cooking at home and also comes with Apprentice Chef's award winning disposable cookware (i.e. pots, pans, baking trays, and utensils), allowing for fast and easy cleanup. Ordering meals is very easy given their user-friendly online platform and mobile app.

Information regarding Customer Service

Market research indicates that the key value propositions for Apprentice Chef, Inc. are that it saves considerable time (deciding what to buy/cook, preparation, and clean up). Also, customers enjoy that they can eat a high quality, home-cooked meal that fits into their busy lifestyle. Additionally, after cooking, customers feel they have accomplished something when compared to ordering delivery. This is due to the fact that they still have to do a little cooking before being able to enjoy their meal.

Overview

The Chef Apprentice dataset provided consists of 1946 entries and 29 columns.

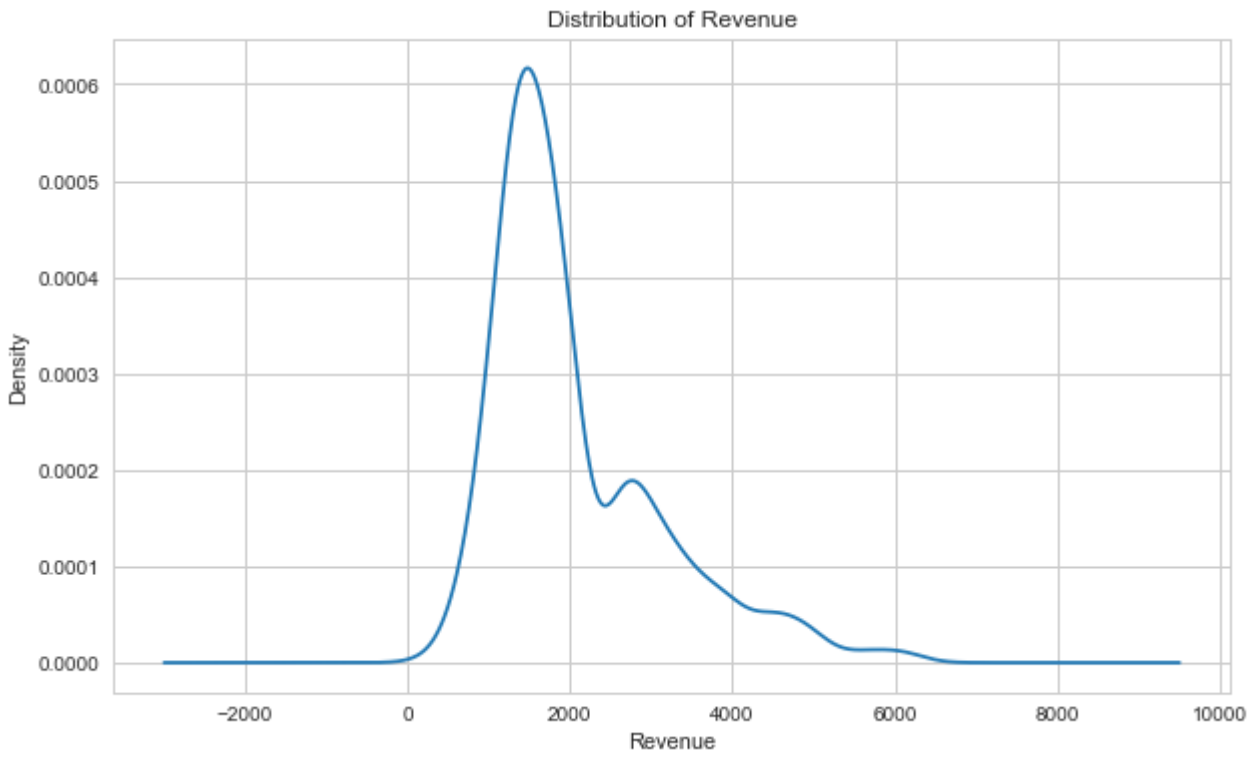
Dataset info:

- Number of variables:29
- Number of observations:1946
- Missing cells:47 (0.1%)

Variable Types:

- Numeric:16
- Categorical:6
- Boolean:5
- Text (Unique):2

- `CANCELLATIONS_BEFORE_NOON` has 667 (34.3%) zeros
- `EARLY_DELIVERIES` has 1167 (60.0%) zeros
- `FAMILY_NAME` has a high cardinality: 1071 distinct value
- `FAMILY_NAME` has 47 (2.4%) missing values
- `FIRST_NAME` has a high cardinality: 1442 distinct values
- `FOLLOWED_RECOMMENDATIONS_PCT` has 155 (8.0%) zeros
- `LATE_DELIVERIES` has 319 (16.4%) zeros
- `TOTAL_PHOTOS_VIEWED` has 1140 (58.6%) zero
- `WEEKLY_PLAN` has 468 (24.0%)



INSIGHTS

- The key performer and the strong contributor to the model were throughout showing strong effect in terms of making revenue:
    - MEDIAN_MEAL_RATING
    - MASTER_CLASS_ATTENDED
    - TOTAL_MEALS_ORDERED
    - CUSTOMER_W_CUSTOMER_SERVICE
    - TASTES_AND_PREFERENCES
    - MOBILE_LOGINS
    - PC_LOGINS

This shows how the revenue is directly being linked through the mentioned parameters.

Also in the analysis, it is quite evident from the graphs, figures and data interpretation that these parameters contribution is the key.

One can see, if the median meal rating is high, then the revenue will go high for a meal as more people will tend to order the same.

Similarly, Total meals ordered is anyway strongly relevant to revenue.

Customer interaction with the services in order to make it better in terms of feedback and continuous correction measures.

Logins generally show the intent of the user as from where do they usually tend to order food.

- If you will have a close tab on model performance, the regression model were quite behaving normally till the time all the data was standardized for the usage of KNN.

  The score drastically increase, which shows the relevance of standardization in terms of regression model, as it tends to bring all the data on same scale and treat them irrespective of their calculating units thus enabling to focus more on the agility of the model with the given set of parameters.

RECOMMEDNATION

- It is quite evident with the direct contribution of PC and mobile logins, that customers tend to be using much of digital tools in order to access food items from the chain and thus we can say that, they generally do order the food rather than visiting a chain outlet.

  Though, deliveries being a positive contributor to Revenue, we should emphasis more on this in coming days in order to ensure no customer is sleeping hungry.

  Also the customization part in term of meal uniqueness, chef's should be encouraged to create a new blend of recipes in order to bring in attention to the customers, the best and luxurious dishes on their plates.

MODEL PERFORMANCE

The best performing model gives an R squared value of 74.568

Conclusion

During a domain knowledge gathering meeting, you learned that the customer service team is responsible for collecting feedback on orders. They do so via a survey instrument allowing users to rate their experience. The survey instrument is similar to that of hotel booking or ride sharing apps and takes approximately one minute to complete. They also send out an email if a user hasn't rated their experience after 24 hours of receiving an order. The team has mentioned that some users give feedback on almost every order, while others only give feedback when wanting to complain. Additionally, some customers contact customer service directly via phone or chat. The Customer Service team mentioned that this is sometimes done to change orders or delivery schedules, but the vast majority of cases are complaints. The team has emphasized that this rarely happens, although some customers complain on a higher percentage of their orders that others.