Lead Scoring Case Study using logistic regression

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Contents

- Problem statement
- Problem approach
- EDA
- Correlations
- Model Evaluation
- Observations
- Conclusion

Problem Statement

- An education company named X Education sells online courses to industry professionals. On any given day, many professionals who are interested in the courses land on their website and browse for courses. They have process of form filling on their website after which the company that individual as a lead.
- Once these leads are acquired, employees from the sales team start making calls, writing emails, etc. Through this process, some of the leads get converted while most do not.
- The typical lead conversion rate at X education is around 30%. Now, this means if, say, they acquire 100 leads in a day, only about 30 of them are converted. To make this process more efficient, the company wishes to identify the most potential leads, also known as Hot Leads.
- If they successfully identify this set of leads, the lead conversion rate should go up as the sales team will now be focusing more on communicating with the potential leads rather than making calls to everyone

Business Objective

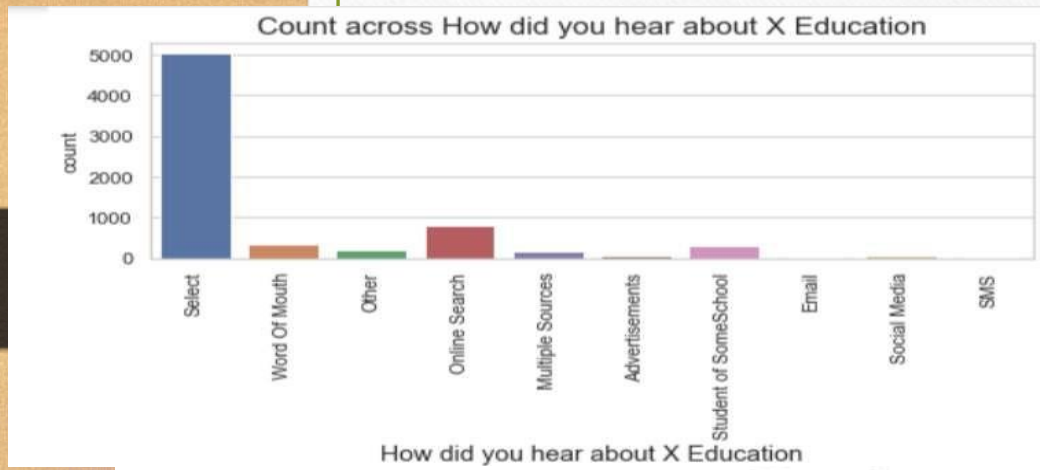
- Lead X wants us to build a model to give every lead a lead score between 0 -100 . So that they can identify the Hot leads and increase their conversion rate as well.
- The CEO want to achieve a lead conversion rate of 80%.
- They want the model to be able to handle future constraints as well like Peak time actions required, how to utilize full man power and after achieving target what should be the approaches.

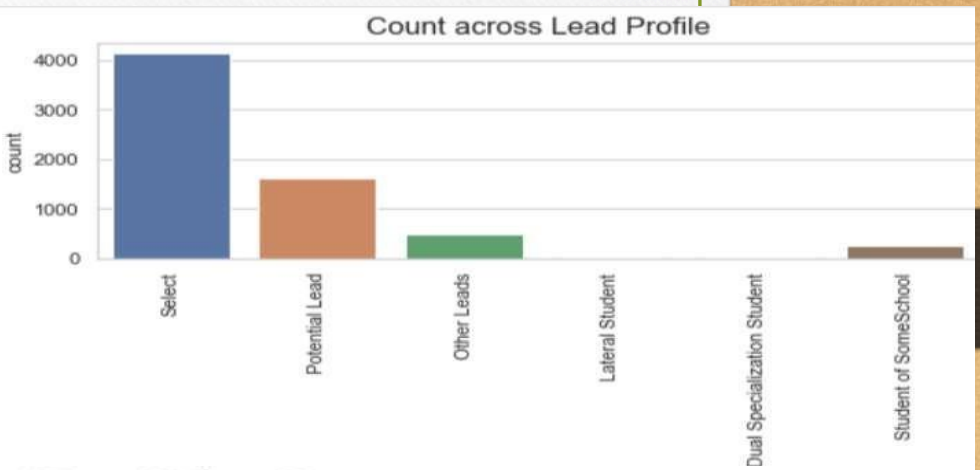
Problem Approach

- Importing the data and inspecting the data frame
- Data preparation
- EDA
- Dummy variable creation
- Test-Train split
- Feature scaling
- Correlations
- Model Building (RFE Rsquared VIF and p- values)
- Model Evaluation
- Making predictions on test set

EDA – Data Cleaning

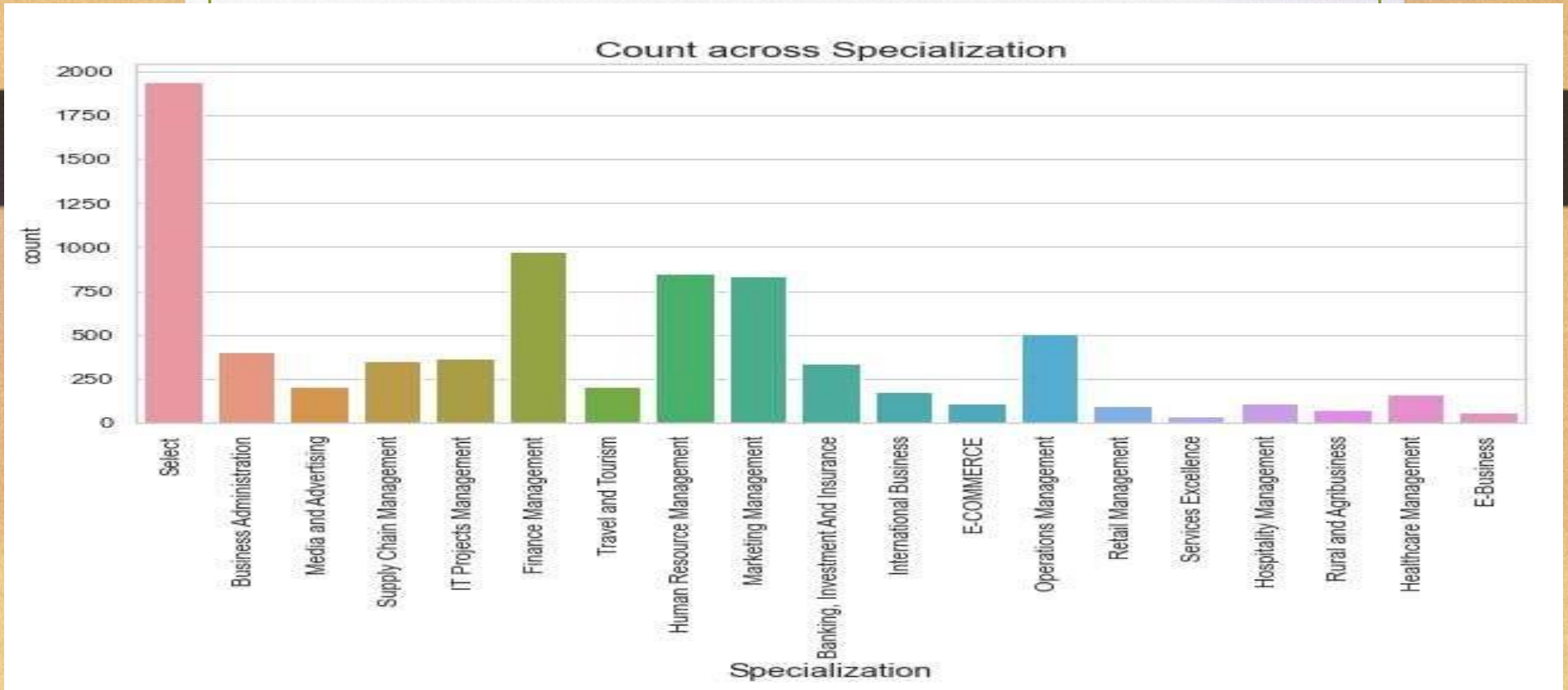
There are a few columns in which there is a level called 'Select' which is taking care.





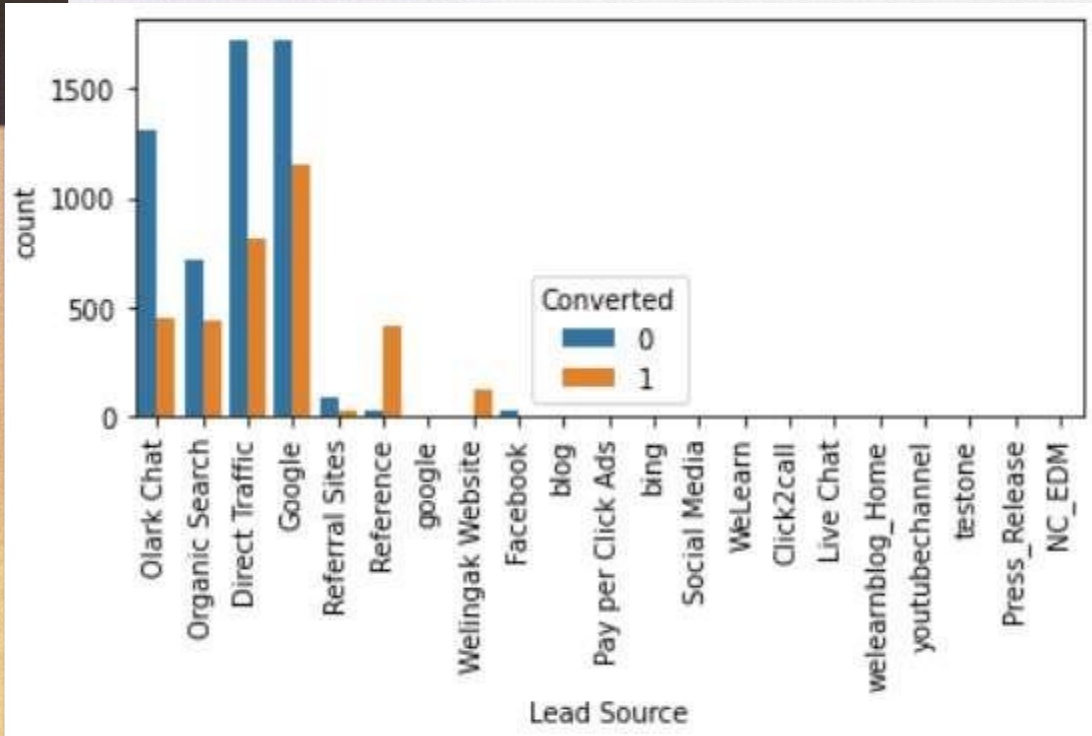
Specialization

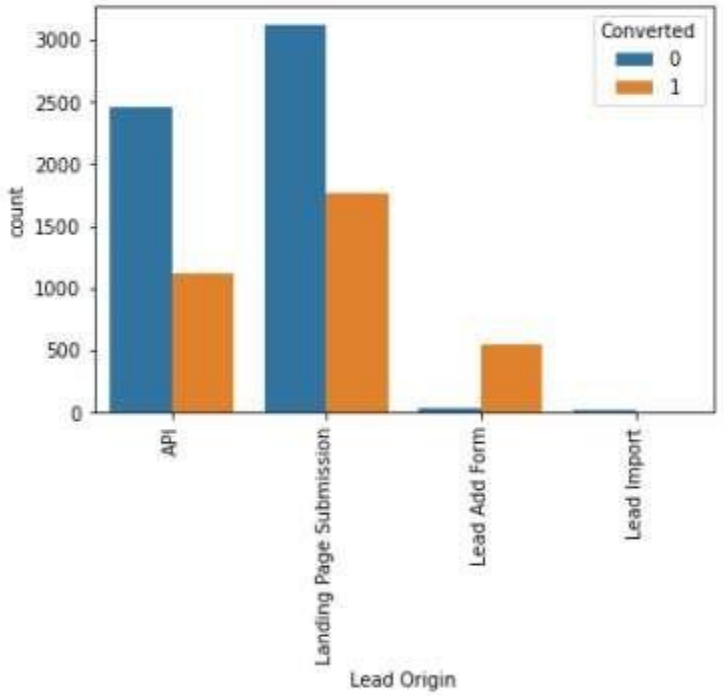
Leads from HR, Finance & Marketing management specializations are high probability to convert



Lead Source & Lead origin

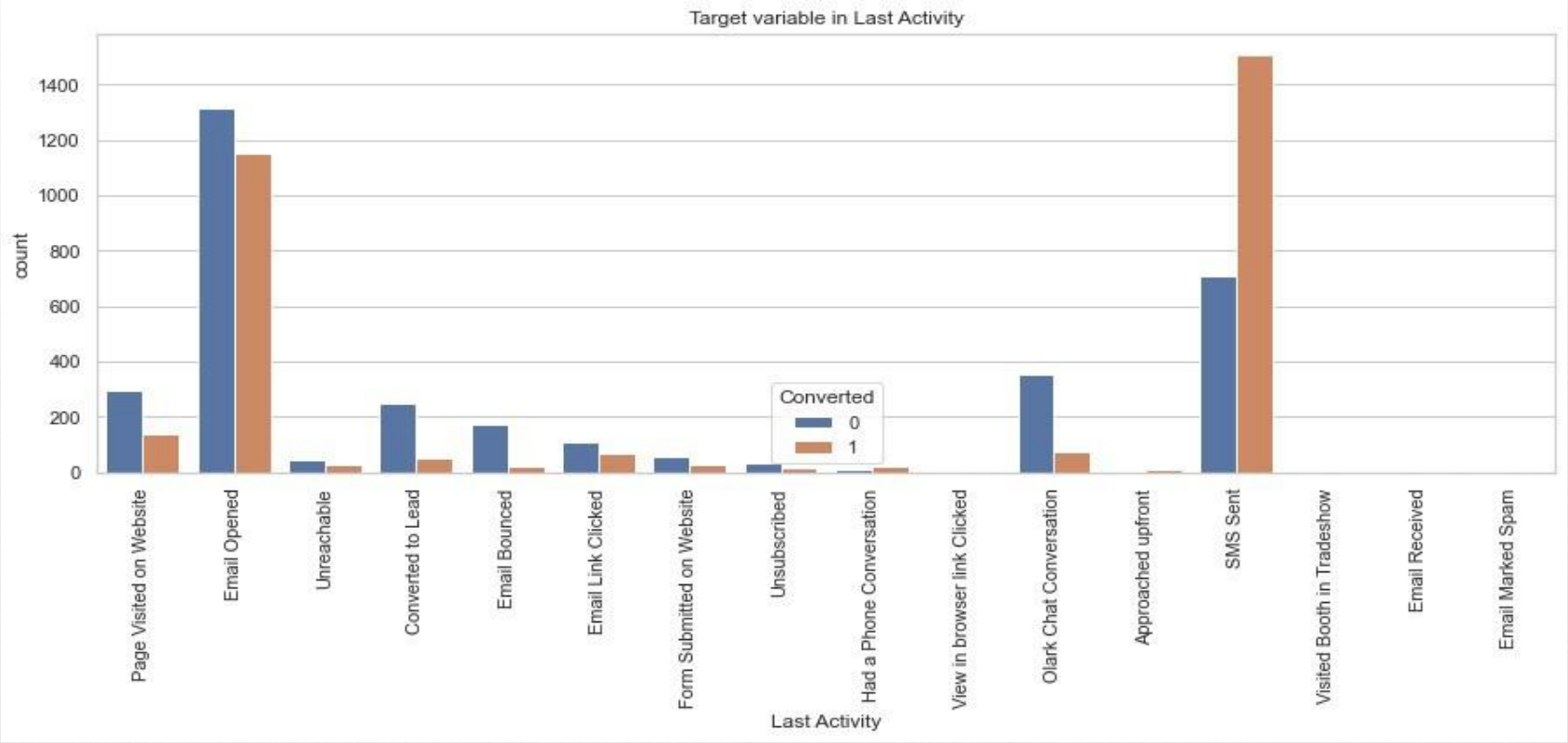
In lead source the leads through google & direct traffic high probability to convert, Whereas in Lead origin most number of leads are landing on submission





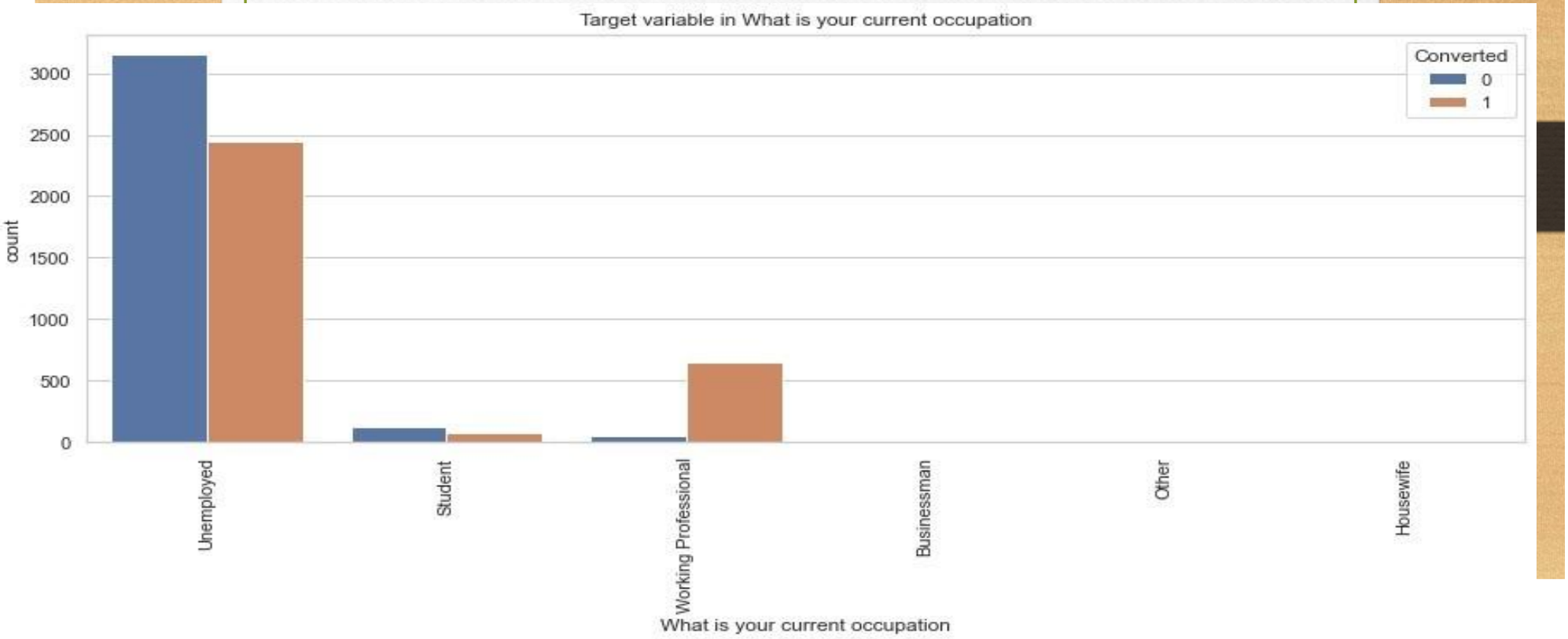
Last lead Activity

Leads which are opening email have high probability to convert, Same as Sending SMS will also benefit



Last What is Your Occupation

Leads which are Unemployed are more interested to join the course than others.



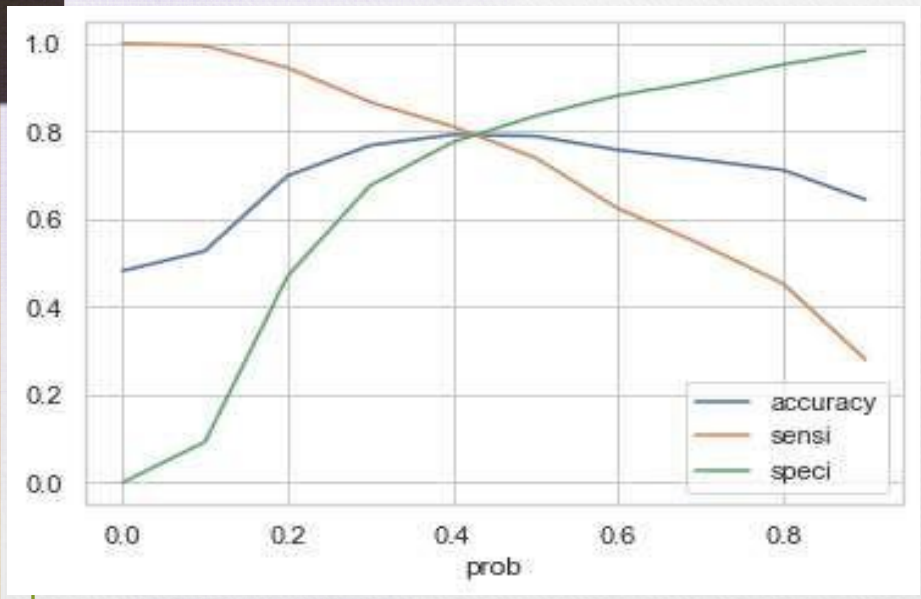
Correlation

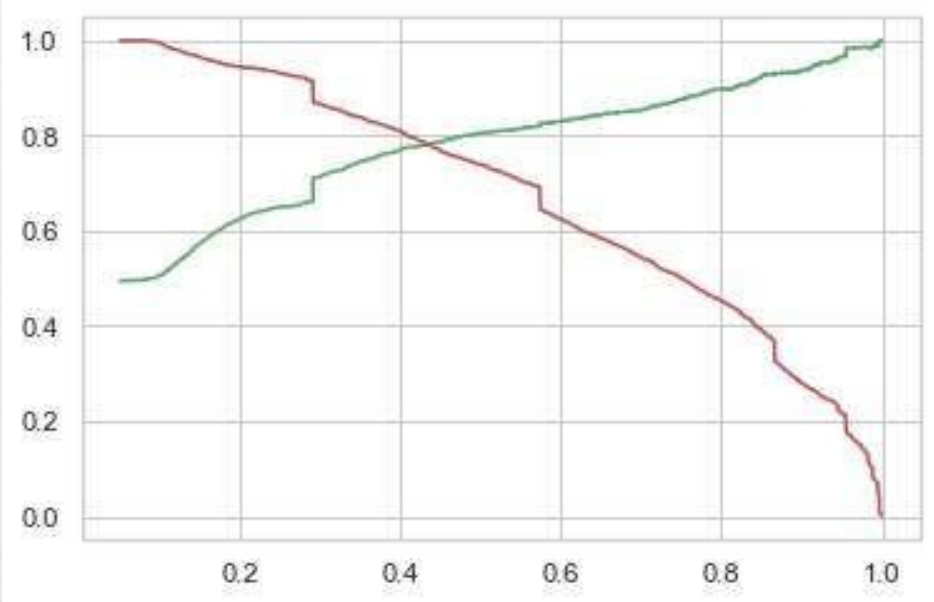
There is no correlation between the variables

Model Evaluation

ROC curve

0.42 is the tradeoff between Precision and Recall -
Thus we can safely choose to consider any Prospect Lead with Conversion **Probability higher than 42 % to be a hot Lead**





Observations

Train Data:
Accuracy : 81.0 %
Sensitivity : 81.7 %
Specificity : 80.6 %

Test Data:
Accuracy : 80.4 %
Sensitivity : 80.4 %
Specificity : 80.5 %

Final Features list

- Lead Source_Olark Chat
- Specialization Others
- Lead Origin_ Lead Add Form
- Lead Source_Welingak Website
- Total Time Spent on Website
- Lead Origin _Landing Page Submission
- What is your current occupation__Working Professionals
- Do Not Email

Recommendations:

- The company **should make calls** to the leads coming from the lead sources "Welingak Websites" and "Reference" as these are more likely to get converted.
- The company **should make calls** to the leads who are the "working professionals" as they are more likely to get converted.
- The company **should make calls** to the leads who spent "more time on the websites" as these are more likely to get converted.
- The company **should make calls** to the leads coming from the lead sources "Olark Chat" as these are more likely to get converted.
- The company **should make calls** to the leads whose last activity was SMS Sent as they are more likely to get converted.
- The company **should not make calls** to the leads whose last activity was "Olark Chat Conversation" as they are not likely to get converted.
- The company **should not make calls** to the leads whose lead origin is "Landing Page Submission" as they are not likely to get converted.
- The company **should not make calls** to the leads whose Specialization was "Others" as they are not likely to get converted.
- The company **should not make calls** to the leads who chose the option of "Do not Email" as "yes" as they are not likely to get converted.

Conclusion

- We see that the conversion rate is 30-35% (close to average) for API and Landing page submission. But very low for Lead Add form and Lead import. Therefore we can intervene that we need to focus more on the leads originated from API and Landing page submission.
- We see max number of leads are generated by google / direct traffic. Max conversion ratio is by reference and welingak website.
- Leads who spent more time on website, more likely to convert.
- Most common last activity is email opened. highest rate = SMS Sent. Max are unemployed. Max conversion with working professional.