Lead Scoring Case Study using logistic regression

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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

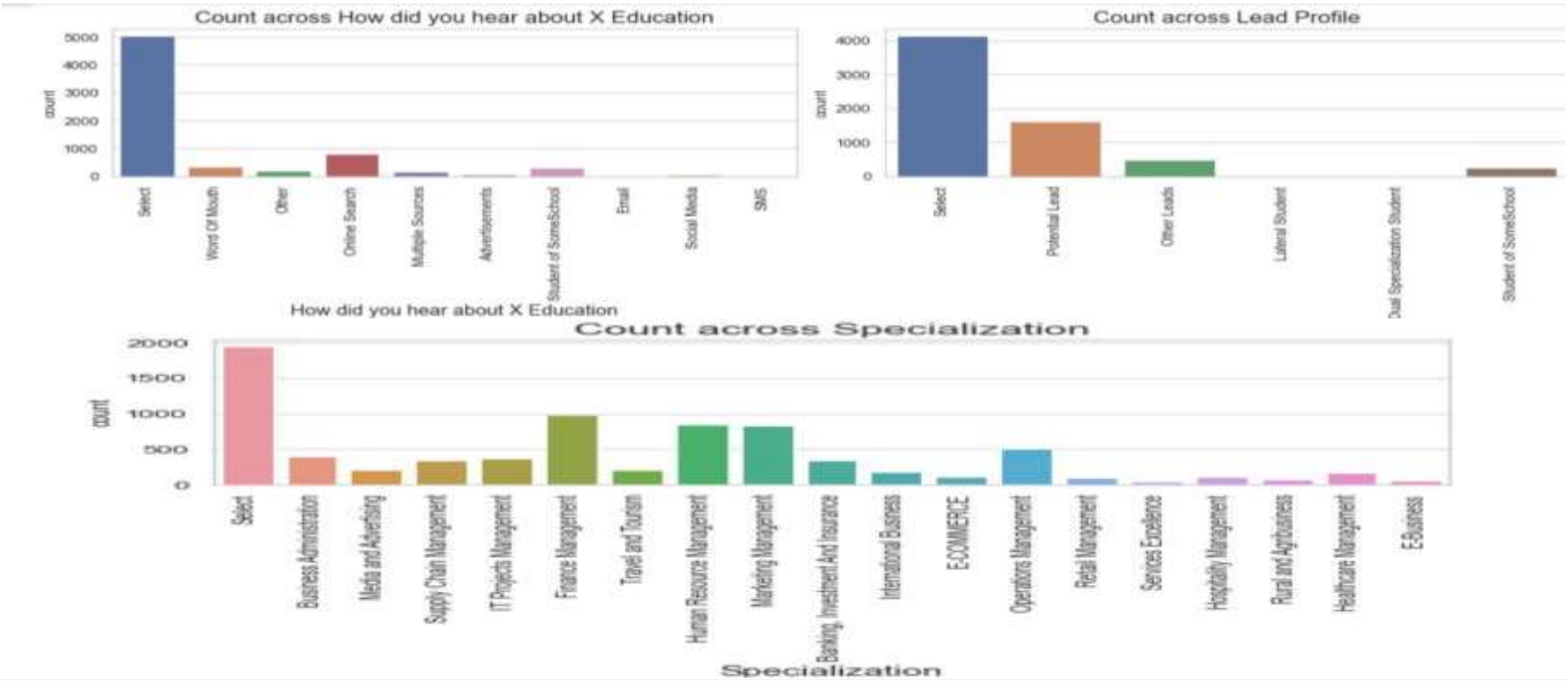
- Lead X wants us to build a model to give every lead a lead score between 0 -100 . So that they can identify the Hot leads and increase their conversion rate as well.
- The CEO want to achieve a lead conversion rate of 80%.
- They want the model to be able to handle future constraints as well like Peak 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

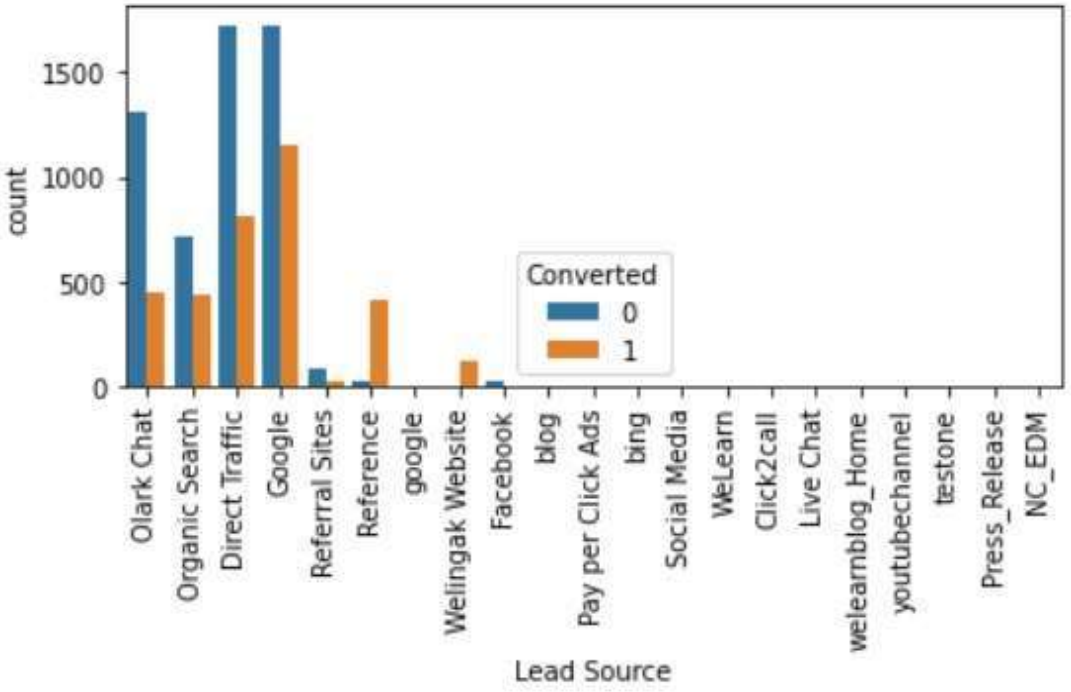
- There are a few columns in which there is a level called 'Select' which is taking care

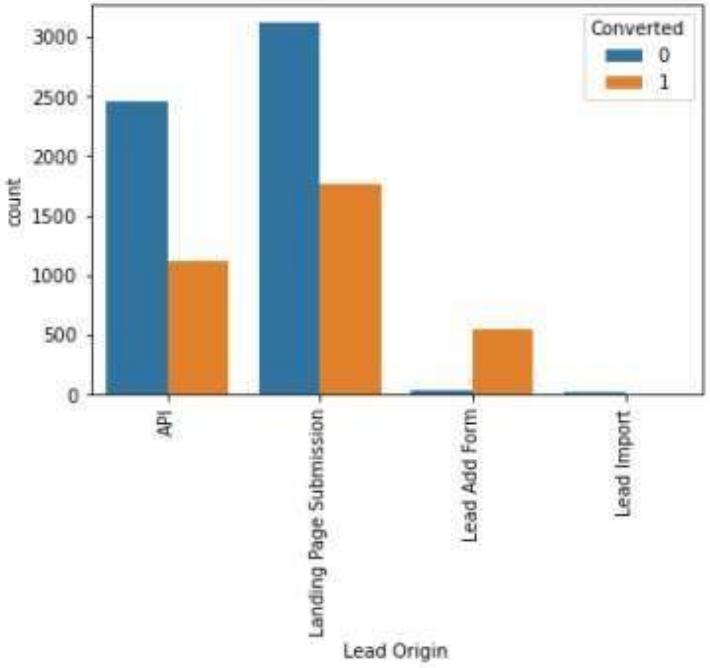


Lead Source & Lead origin

In lead source the leads through google & direct traffic high probability to convert

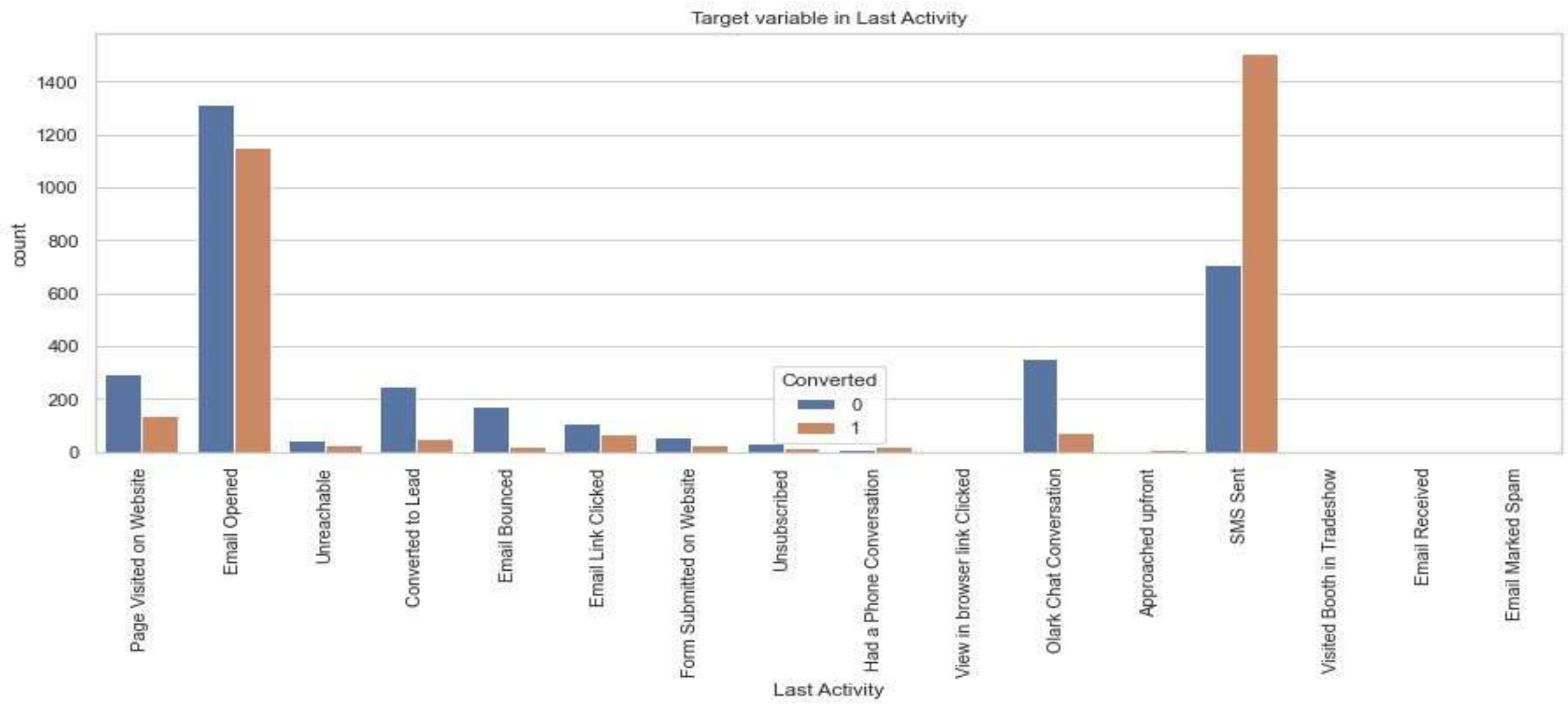
Whereas in Lead origin most number of leads are landing on submission





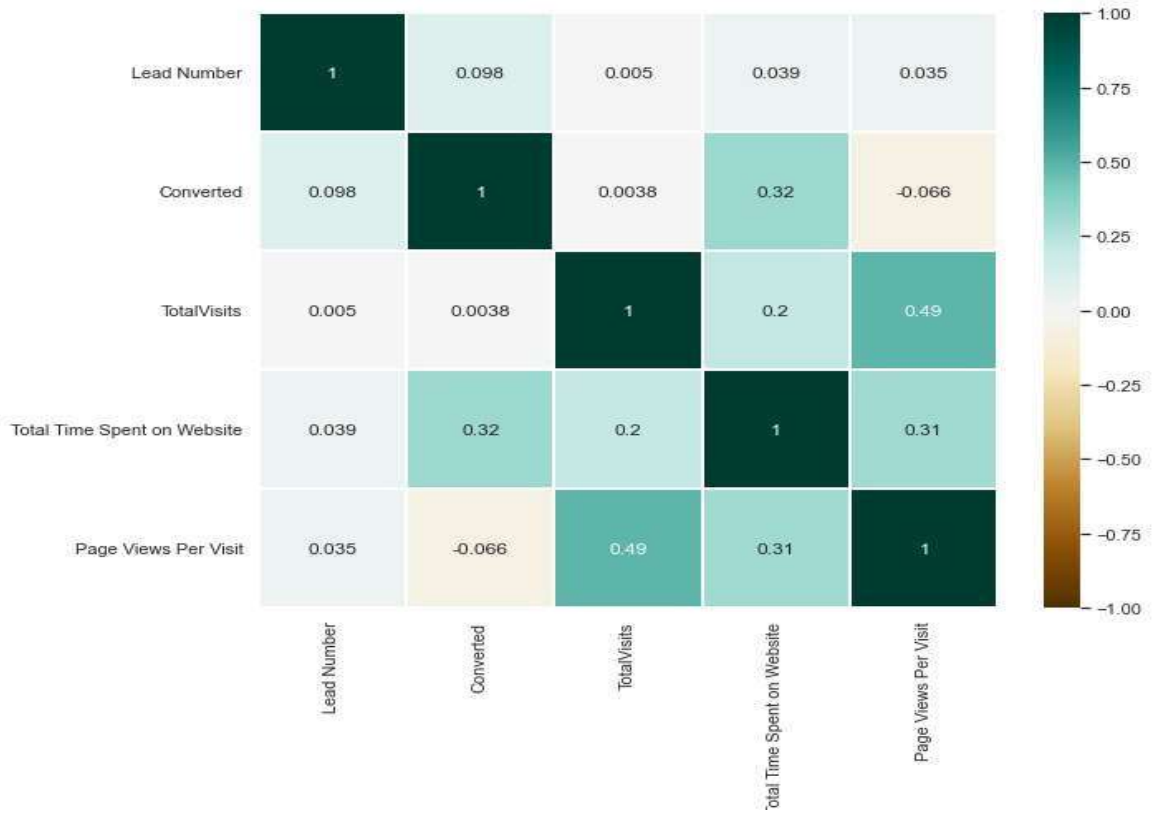
Last lead Activity

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



Correlation

There is no correlation between the variables

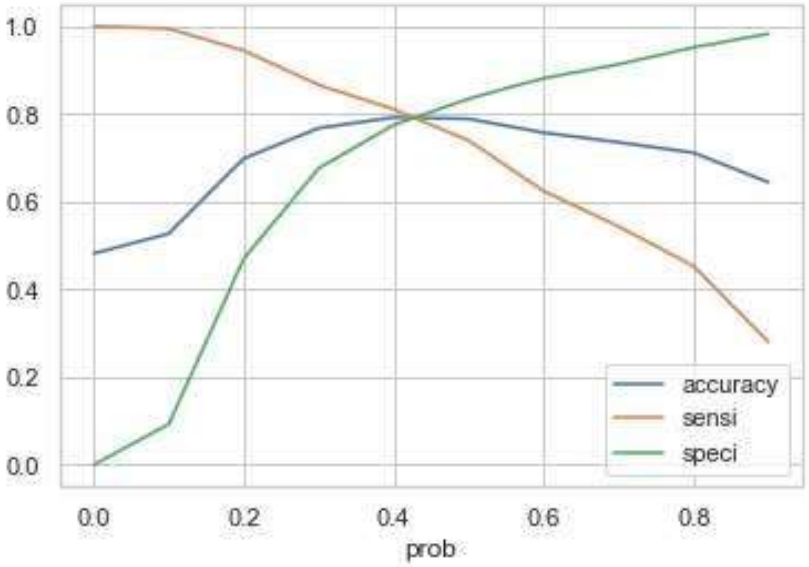


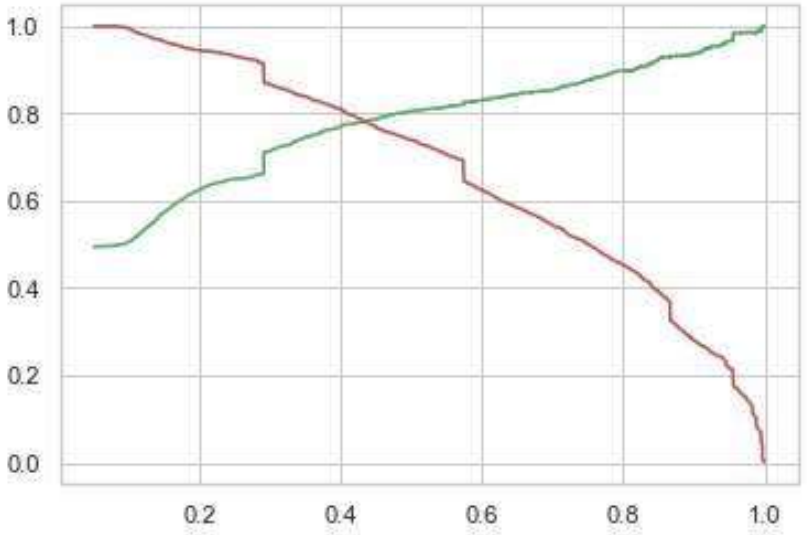
Model Evaluation

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 : 80%
Sensitivity : 77%
Specificity : 80%

Test Data:

Accuracy : 80%
Sensitivity : 77%
Specificity : 80%

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

Conclusion

- The conversion rate for API and landing page submissions is approximately 30-35%, aligning with the industry average. However, conversion rates remain significantly low for Lead Add form submissions and Lead imports. This suggests a strategic focus on leads originating from API and landing page submissions would be beneficial.
- The highest number of leads are generated through Google search and direct traffic, while the highest conversion rates are observed from referrals and the Welingak website.
- Leads who spend more time on the website demonstrate a higher likelihood of conversion.
- The most common last recorded activity is email opens, whereas the highest conversion rate is linked to SMS engagement.