# Lead Scoring Case Study

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# Outline

1. Introduction to problem, business objective and solution approach

2. Insights on dependent variables with respect to 'Conversion'

3. Model Evaluation

4. Comparing evaluation metrics for Train and Test Set

 5. Factors influencing lead conversion

6. How to use Lead Scoring Engine

 7. Recommendations on optimizing phone calls for converting leads

8. Bonus: Insights on capturing quality leads

# Introduction

X Education, a provider of online courses, is on a mission to pinpoint leads with the highest potential to become paying customers. Currently, we're at a 30% conversion rate, but our objective is to elevate this to 80%.

The approach involves devising a model using logistics regression that allocates a lead score to each potential lead. A higher score signifies a higher probability of conversion. The lead scoring engine will help the team to make highly targeted calls to only promising leads.
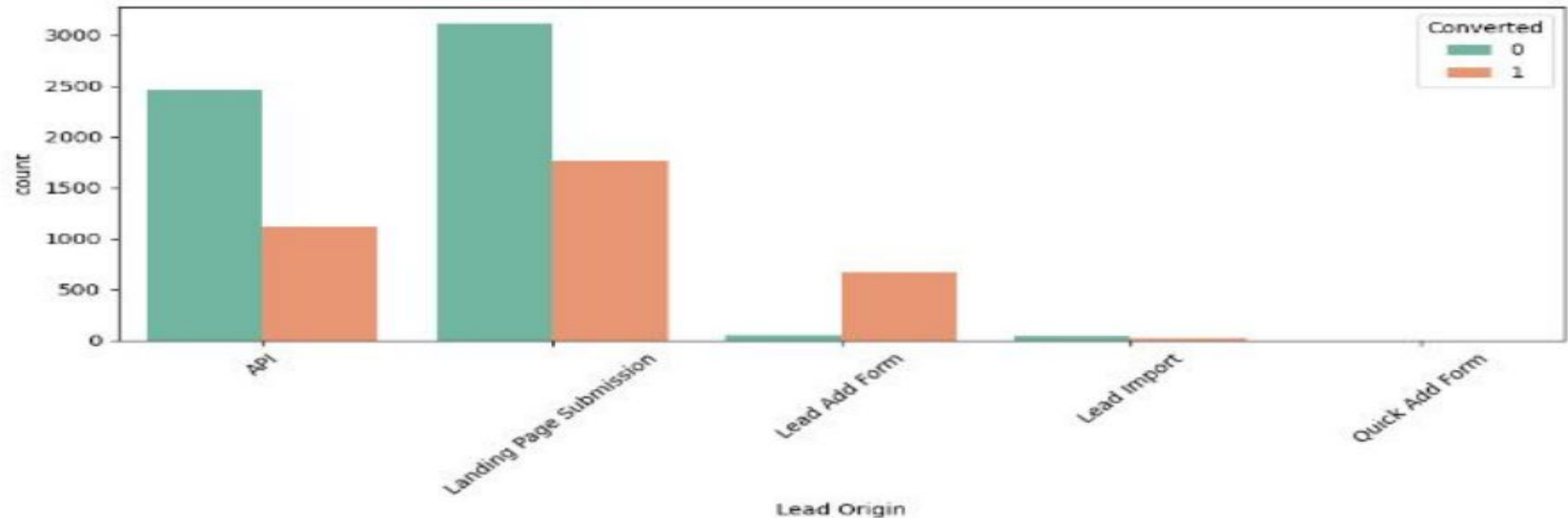
# Lead Source vs Converted

Volume of leads coming from Google, Direct traffic, Olark chat, however the conversion rate is less Leads from Reference, Welingak Website even though low in volume has high conversion rate
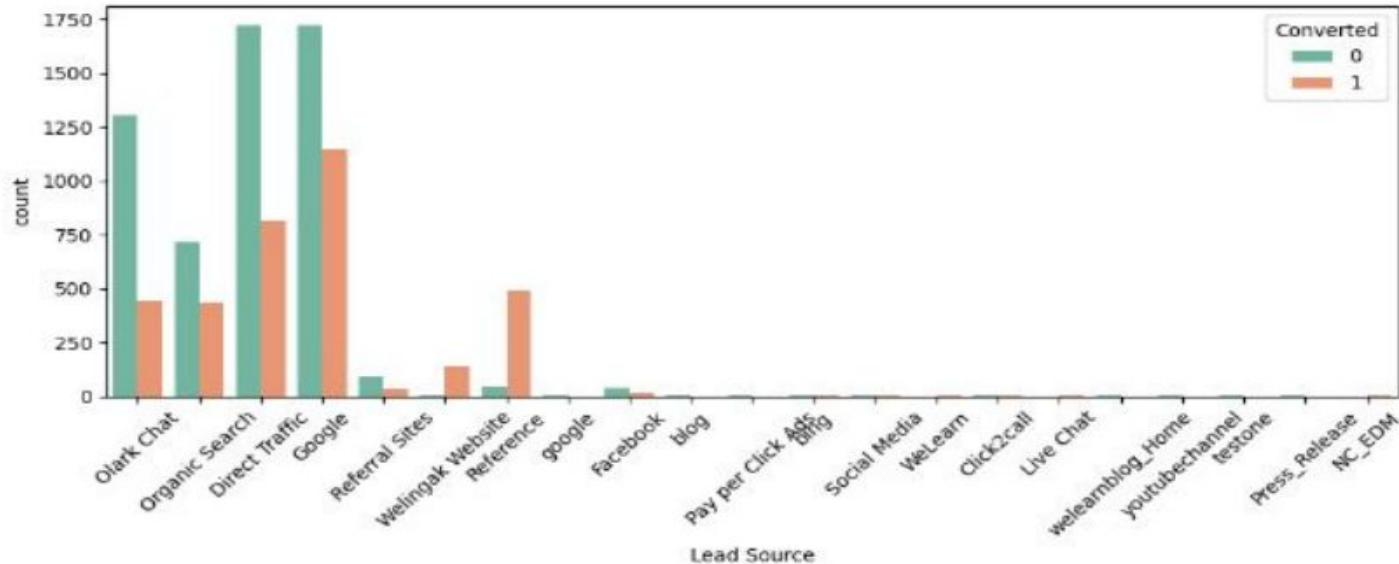
# Lead Origin vs Converted

High total count of leads originating from 'API' and 'Landing Page Submission'

Total lead count originating from 'Lead Add Form' is less in volume but the conversion rate is as high as ~90%
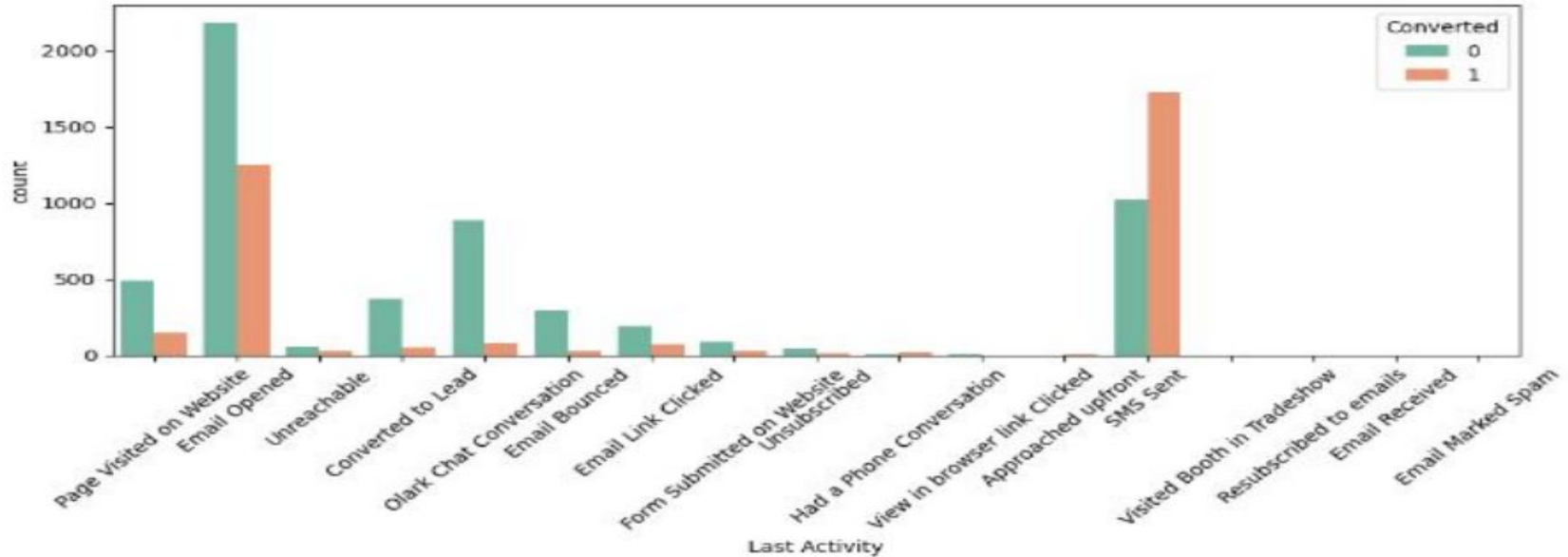
# Last Activity vs Converted

Most leads 'Email Opened' and 'SMS Sent' as their last activity If the leads last activity is SMS Sent, the lead has high conversion rate
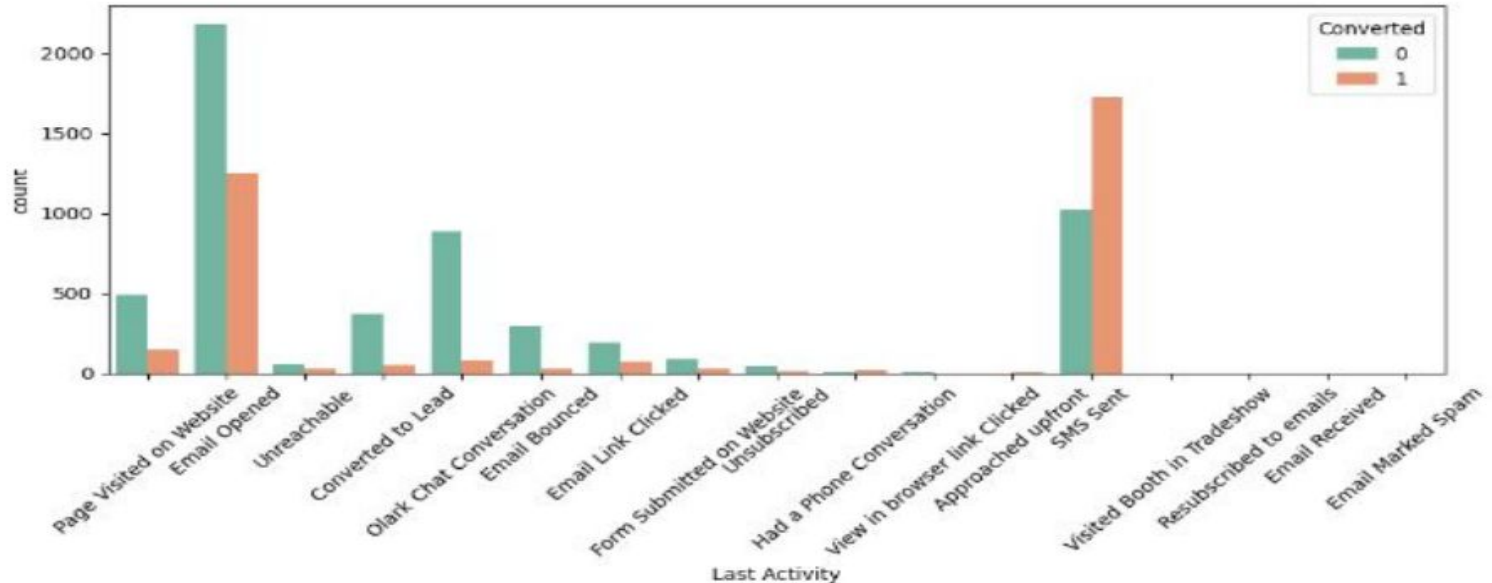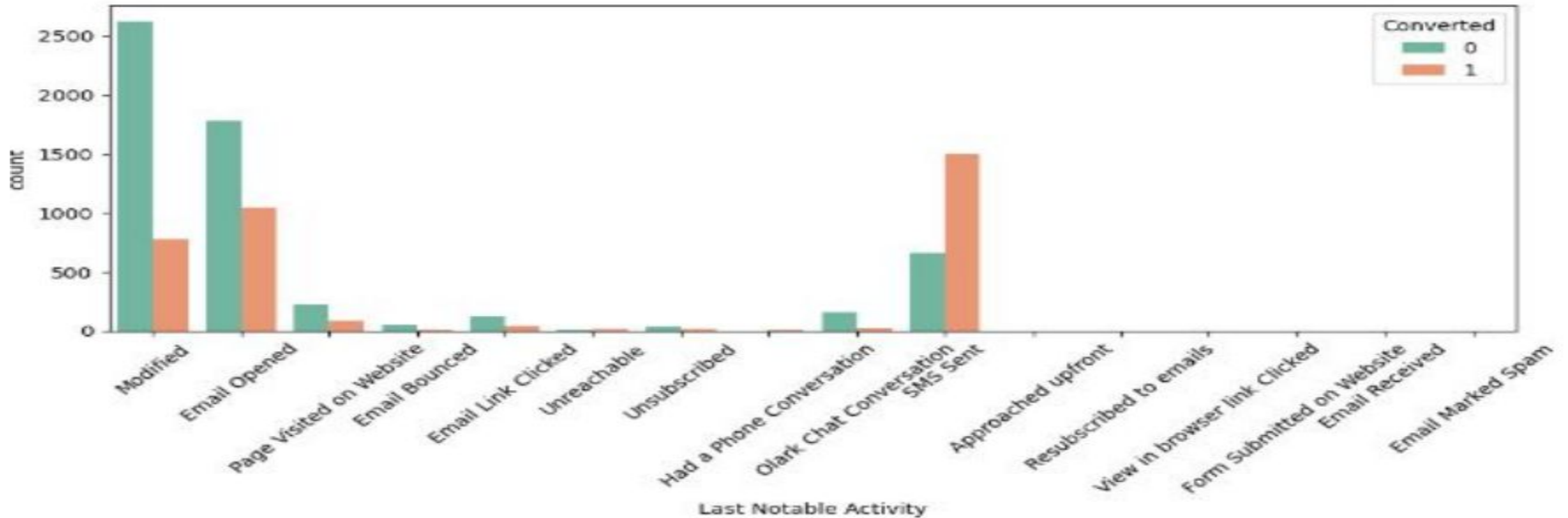
# What is your current occupation vs Converted

Most leads 'Email Opened' and 'SMS Sent' as their last activity If the leads last activity is SMS Sent, the lead has high conversion rate

# Last Notable Activity vs Converted

There are many leads with last notable activity from 'Modified' and 'Email Opened' but the conversion rate is low

# Total Visits, Page views per Visit vs Converted

Treated outliers by limiting them to the 95th percentile.

The median values of 'Total Visits' and 'Page Views Per Visit' are similar for both converted and unconverted leads, suggesting both variables don't influence the conversion rate
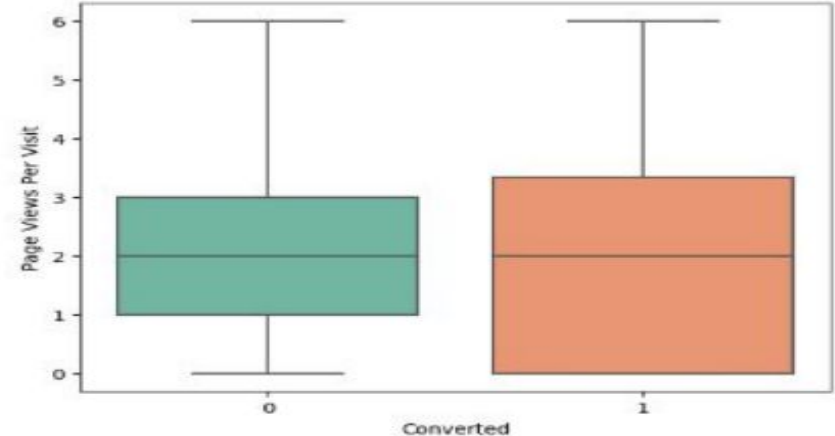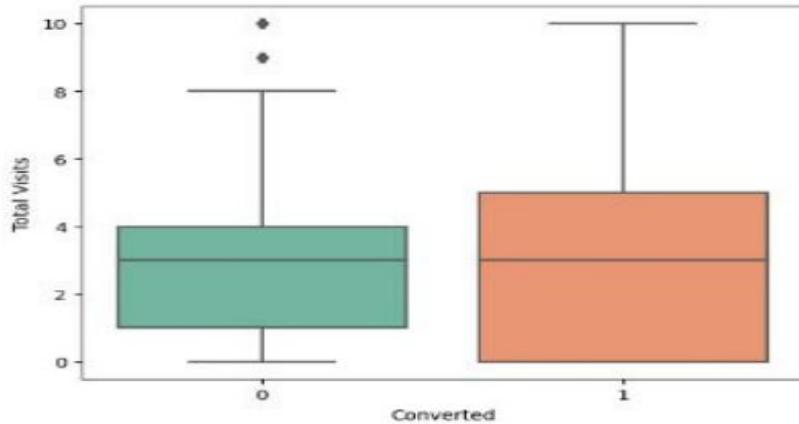
# Total Time on the Website vs Converted
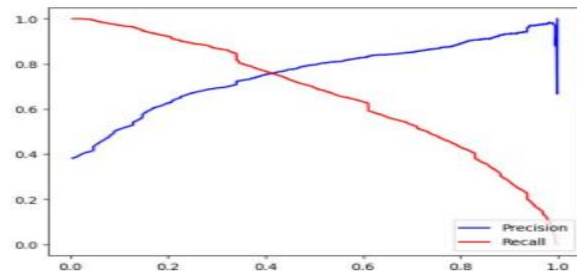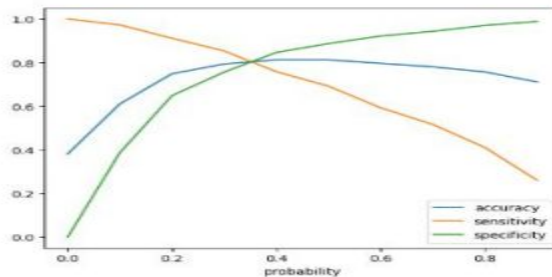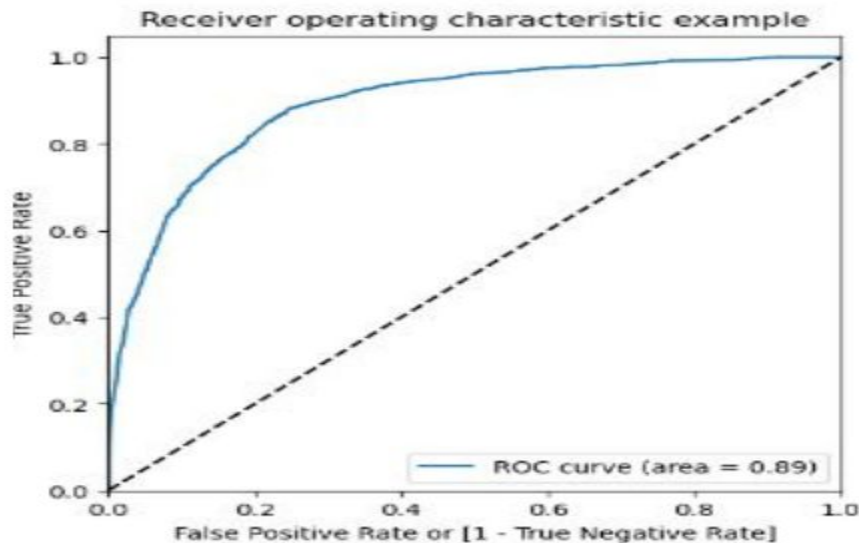
Total Time Spent on Website revealed that leads spending more time on the website are more likely to convert
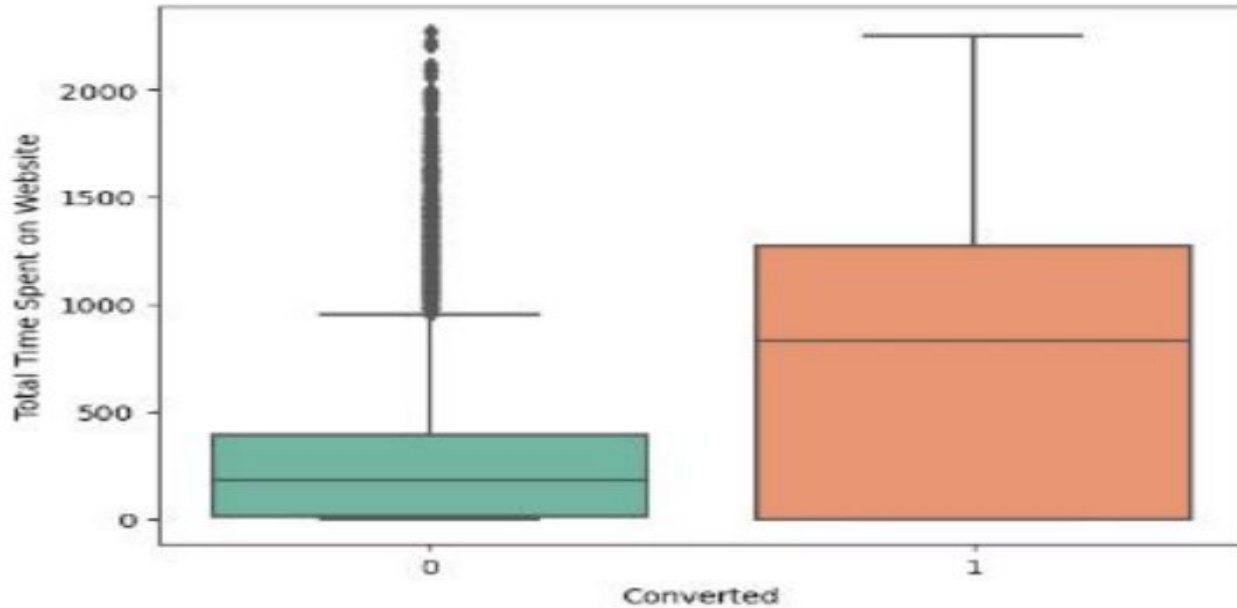
# Model Evaluation

The closer area under the ROC is to 1, the better the model and ours is 0.89. Based on accuracy, sensitivity and specificity optimal cutoff is 0.4 Based on Precision-Recall Trade off, cutoff is 0.42 To increase precision to 80%, the cut-off is 0.5

# Comparing evaluation metrics for Train & Test Set

The CEO aims for an 80% conversion rate. To achieve this, we can adjust the model to be more sensitive to potential conversions, even if it means being less accurate in identifying non-conversions. Our F1 score of 0.75 indicates a good balance between accurately predicting conversions and capturing as many actual conversions as possible

| Metric | Train Set | Test Set |
|---|---|---|
| Accuracy | 81.5% | 81.4% |
| Sensitivity (Recall) | 76.6% | 75.7% |
| Specificity | 84.4% | 85.1% |
| Precision | 75.2% | 76.8% |

# Factors influencing lead conversion

The top 3 factors improve odds of converting a lead dramatically. The variables with less than 1 odd ratio means that an increase in that predictor is associated with a decrease in the odds of a lead converting

|    | Variable | Odds Ratio |
|----|----------|------------|
| 0  | Lead Origin_Lead Add Form | 31.393435 |
| 1  | What is your current occupation_Working Profes... | 12.546146 |
| 2  | Last Activity_Digital_or_Direct_Engagement | 10.540221 |
| 3  | Lead Source_Welingak Website | 6.500847 |
| 4  | Last Activity_SMS Sent | 5.388959 |
| 5  | Last Notable Activity_Not_Contactable | 3.911888 |
| 6  | Lead Source_Olark Chat | 3.326044 |
| 7  | Total Time Spent on Website | 2.974224 |
| 8  | Last Activity_Email Opened | 1.772518 |
| 9  | Last Notable Activity_Modified | 0.506532 |
| 10 | What is your current occupation_unknown | 0.334879 |
| 11 | Do Not Email | 0.260373 |
| 12 | const | 0.229862 |

# How to use Lead Scoring Engine

Looking at the evaluation metrics of the model and lead scoring engine output here, calling a lead score of more than 50 will get ensure conversion

|   | Actual_conversion | Conversion_prob | Predicted_outcome | Lead_Score |
|---|---|---|---|---|
| 0 | 1 | 0.534218 | 1 | 53 |
| 1 | 1 | 0.935764 | 1 | 94 |
| 2 | 1 | 0.826057 | 1 | 83 |
| 3 | 0 | 0.126692 | 0 | 13 |
| 4 | 1 | 0.827335 | 1 | 83 |
| 5 | 1 | 0.608784 | 1 | 61 |
| 6 | 1 | 0.530730 | 1 | 53 |
| 7 | 1 | 0.205891 | 0 | 21 |
| 8 | 0 | 0.028027 | 0 | 3 |
| 9 | 1 | 0.389015 | 0 | 39 |

# Recommendations on optimizing phone calls for converting leads

## Call when

1. **Prioritize Your Leads**: Call leads who are currently working professionals, especially if they've come in through the Lead Add Form, Welingak website, or Olark Chat.
2. **Focus on Engaged Leads**:: Reach out to leads who have shown positive interaction with your digital channels or in person like spent more time on the website
3. **Leverage Brand Awareness**: Call leads who have recent activity of SMS Sent. The brand will be fresh in their minds, leading to more productive conversations.

## Emails and SMS when

1. **Know Your Audience**: Avoid calling leads who are student, especially those who have not selected any occupation.
2. **Use SMS for Retargeting**: Retarget by sending SMS to leads whose last activity was opening an email. SMS is a better converting channel than emails and is safer too, as too many automated emails can lead to unsubscribing.
3. **References from Existing Customers**: Reach out to existing customers for references using emails and SMS.

# Bonus: Insights on capturing quality leads

- **Boost Your Online Presence**: Consider running ads or optimize website for search engine (SEO) targeted for working professionals.
- **Enhance User Experience**: Make sure that the Lead Form and Olark Chat are easily accessible on your website. This will facilitate better interaction with potential customers.
- **Quality Over Quantity**: Increasing the total visits doesn't necessarily benefit your business. Retargeting tactics like running retargeting Ads may not be as effective. Instead, focus on making your website content more engaging and meaningful. Remember, leads who spend more time on your website are more likely to convert.
- **Strategic Partnerships**: Negotiate for a better positioning of the X Education course on the Welingak Website. This could potentially increase visibility and attract more leads.