

The analysis conducted for X Education aimed at enhancing the enrolment of industry professionals in their courses. Initial data provided valuable insights into customer site visits, duration, sources, and conversion rates. The following steps were employed:

1. Data Cleaning:

The data underwent partial cleaning, addressing null values and replacing the "select" option with null since it lacked significant information. Some null values were changed to 'not provided' to retain essential data. For geographical data, categories were refined into 'India,' 'Outside India,' and 'not provided.'

2. EDA (Exploratory Data Analysis):

A quick EDA revealed irrelevant elements in categorical variables, while numeric values showed no outliers.

3. Dummy Variables:

Dummy variables were created, with subsequent removal of dummies containing 'not provided' elements. For numeric values, MinMaxScaler was applied.

4. Train-Test Split:

The dataset was split into 70% training and 30% testing.

5. Model Building:

Recursive Feature Elimination (RFE) identified the top 15 relevant variables. Further manual removal of variables depended on VIF values and p-values (keeping variables with $VIF < 5$ and $p\text{-value} < 0.05$).

6. Model Evaluation:

A confusion matrix was generated. The optimal cut-off value (using ROC curve) yielded an accuracy, sensitivity, and specificity of approximately 80%.

7. Prediction:

Prediction was executed on the test dataset with an optimum cut-off set at 0.35, achieving an accuracy, sensitivity, and specificity of 80%.

8. Precision – Recall:

Precision-Recall analysis was employed, identifying a cut-off of 0.41 with precision around 73% and recall around 75% on the test dataset.

The analysis highlighted key variables influencing potential buyers, prioritized as follows:

1. Total time spent on the Website.
2. Total number of visits.
3. Lead source, particularly from Google, Direct traffic, Organic search, and Welingak website.
4. Last activity, notably SMS and Olark chat conversation.
5. Lead origin as Lead add format.
6. Current occupation as a working professional.

Leveraging these insights, X Education can strategically engage with potential buyers, maximizing the likelihood of course enrolment and fostering continued success.