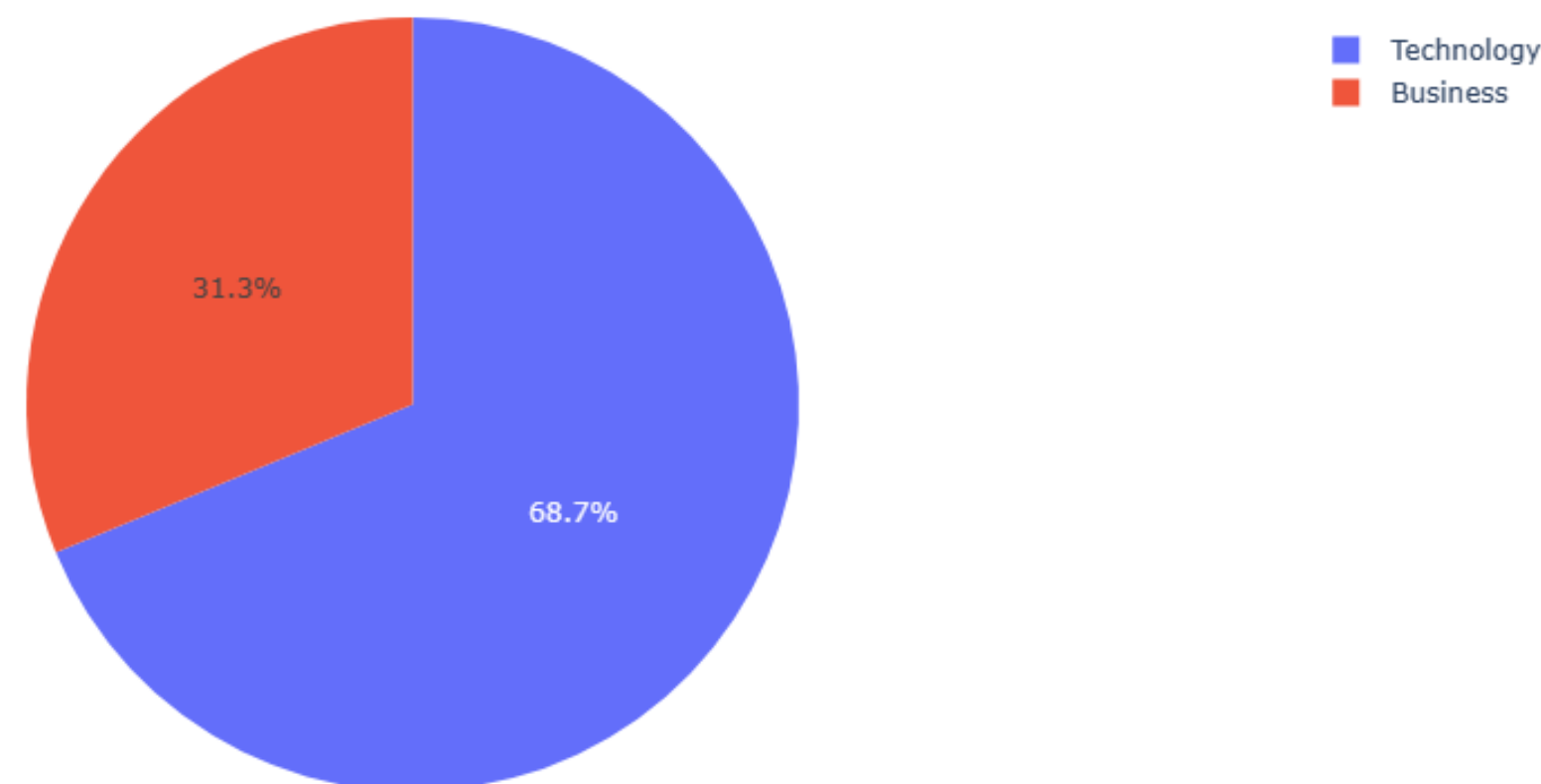


Human Resources AI-ML Case Study

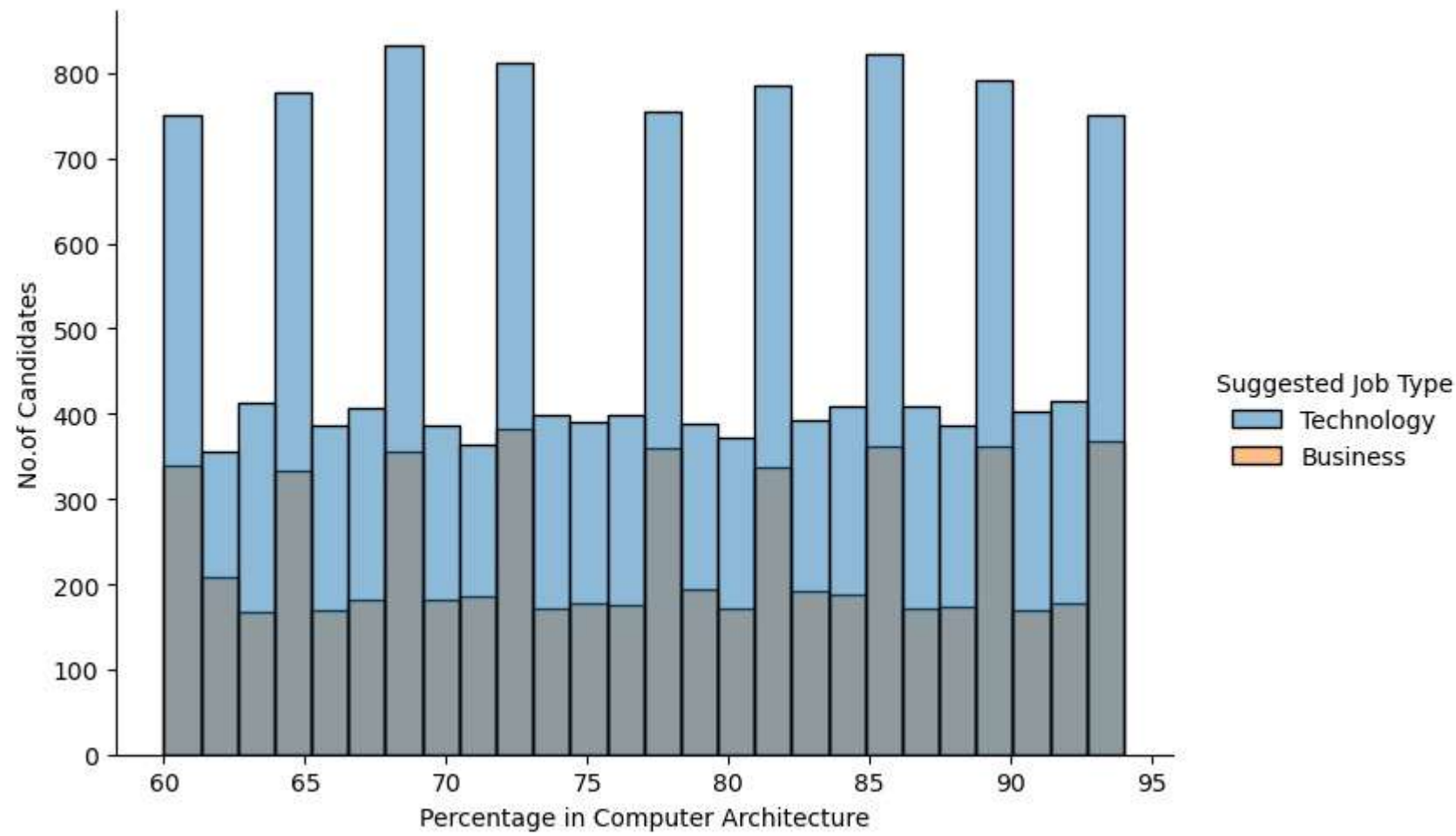
Recruitment is an essential part of human resource management, as it is crucial to find the right people to fill job vacancies within an organization. It is closely related to career counselling as both aim to match individuals with jobs that suit their skills, interests and career goals. Auto-ML can help career counsellors provide more accurate and personalized advice to their clients, leading to better career outcomes and increased job satisfaction. Auto-ML algorithms can track a candidate's career progression and provide insights into how their career is developing. This information can be used to identify areas where further development or training may be needed, or to suggest potential career changes. The Auto-ML model built should accurately predict the most suitable career options for an individual based on their unique profile. This includes analyzing various factors such as educational qualifications, work experience, skills, interests, and personality traits. The model will need to be trained on a large and diverse dataset that includes information about different career paths and the skills and qualifications required for each one. The model should be able to accurately predict the most suitable career options for the individual based on their profile.

Class Distribution

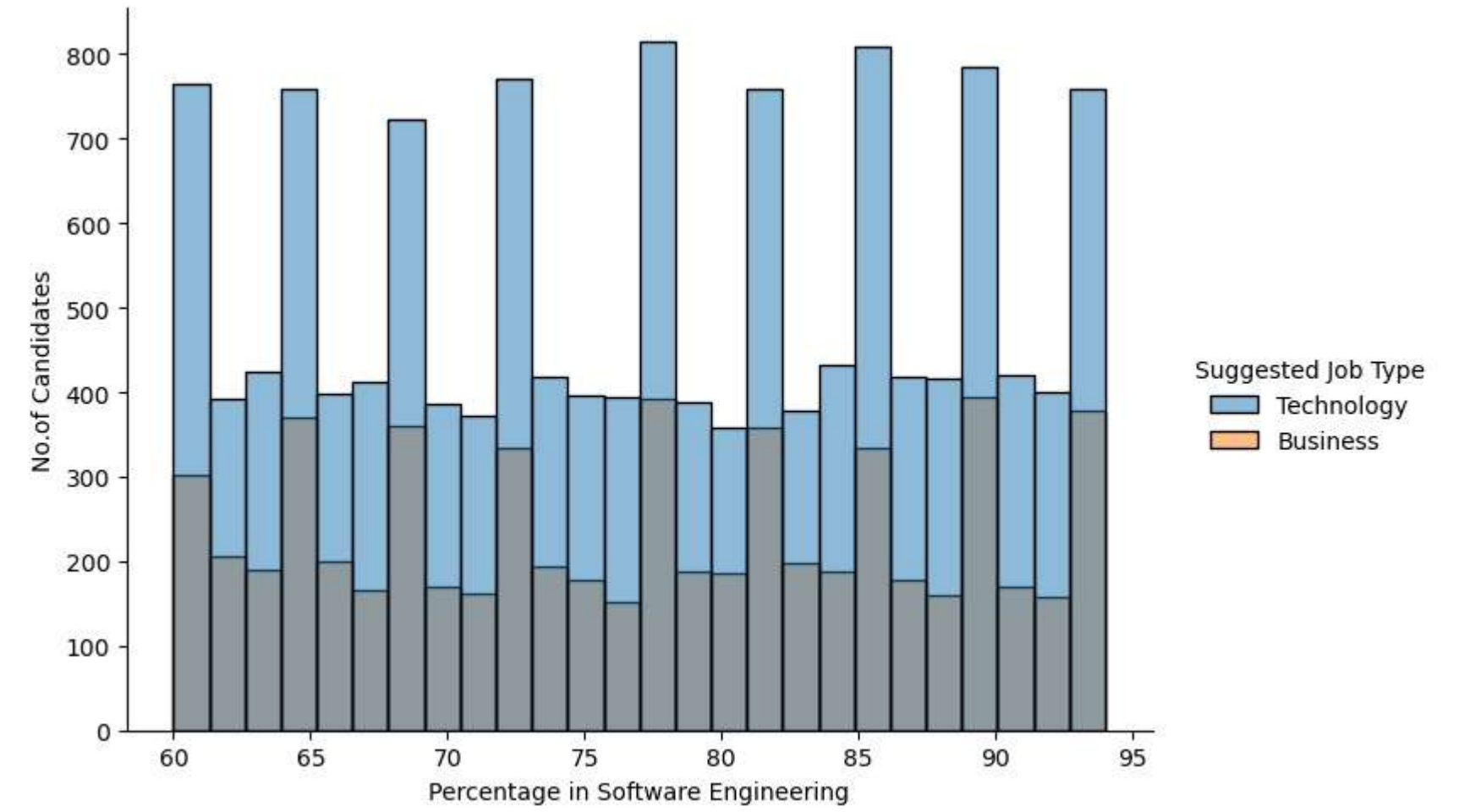


Suggested Job Role	No. of Candidates
Business	13748
Technology	6252
Business Candidate Rate	31.3%
Technology Candidate Rate	68.7%

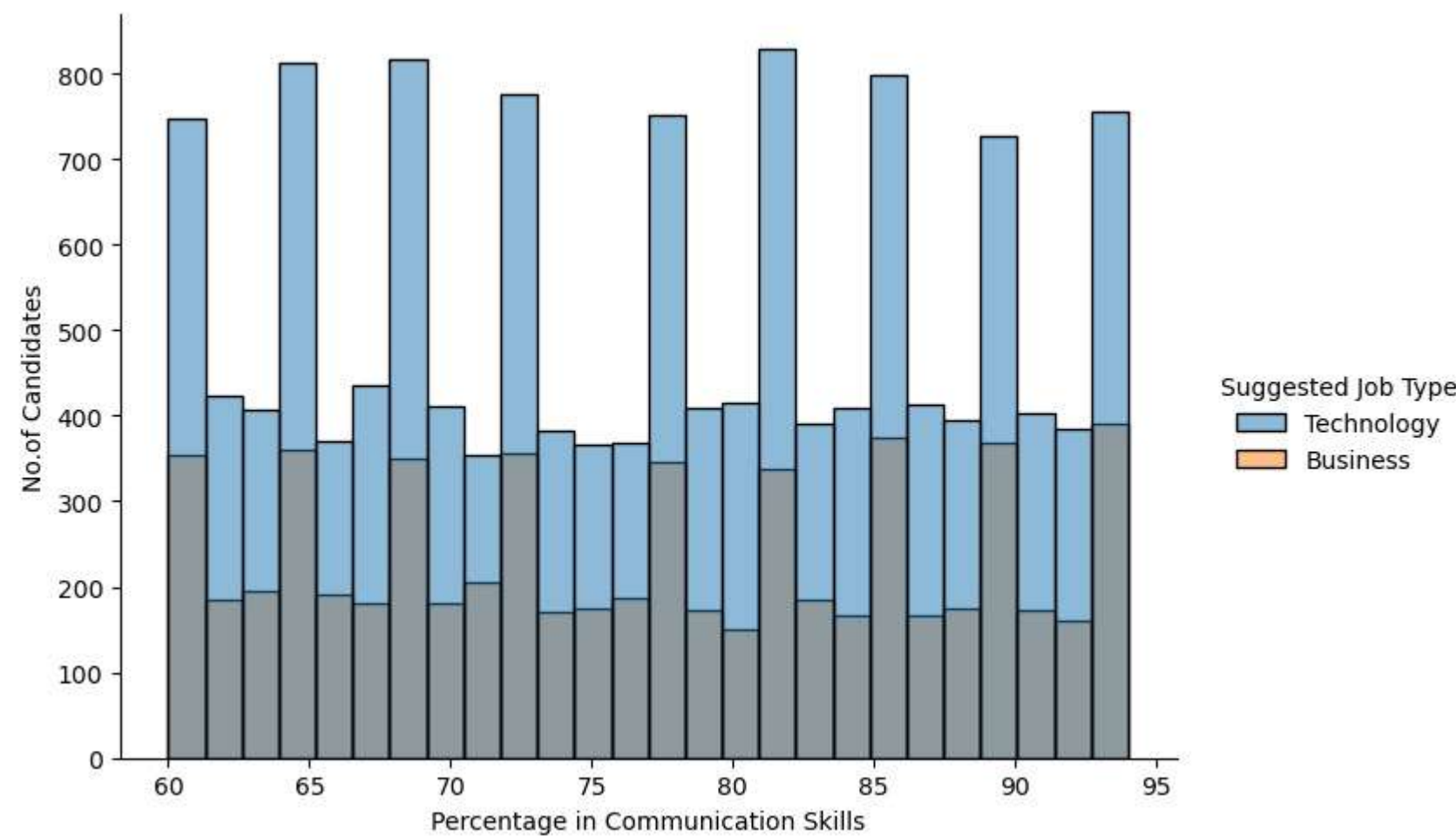
Features Responsible : Auto-ML



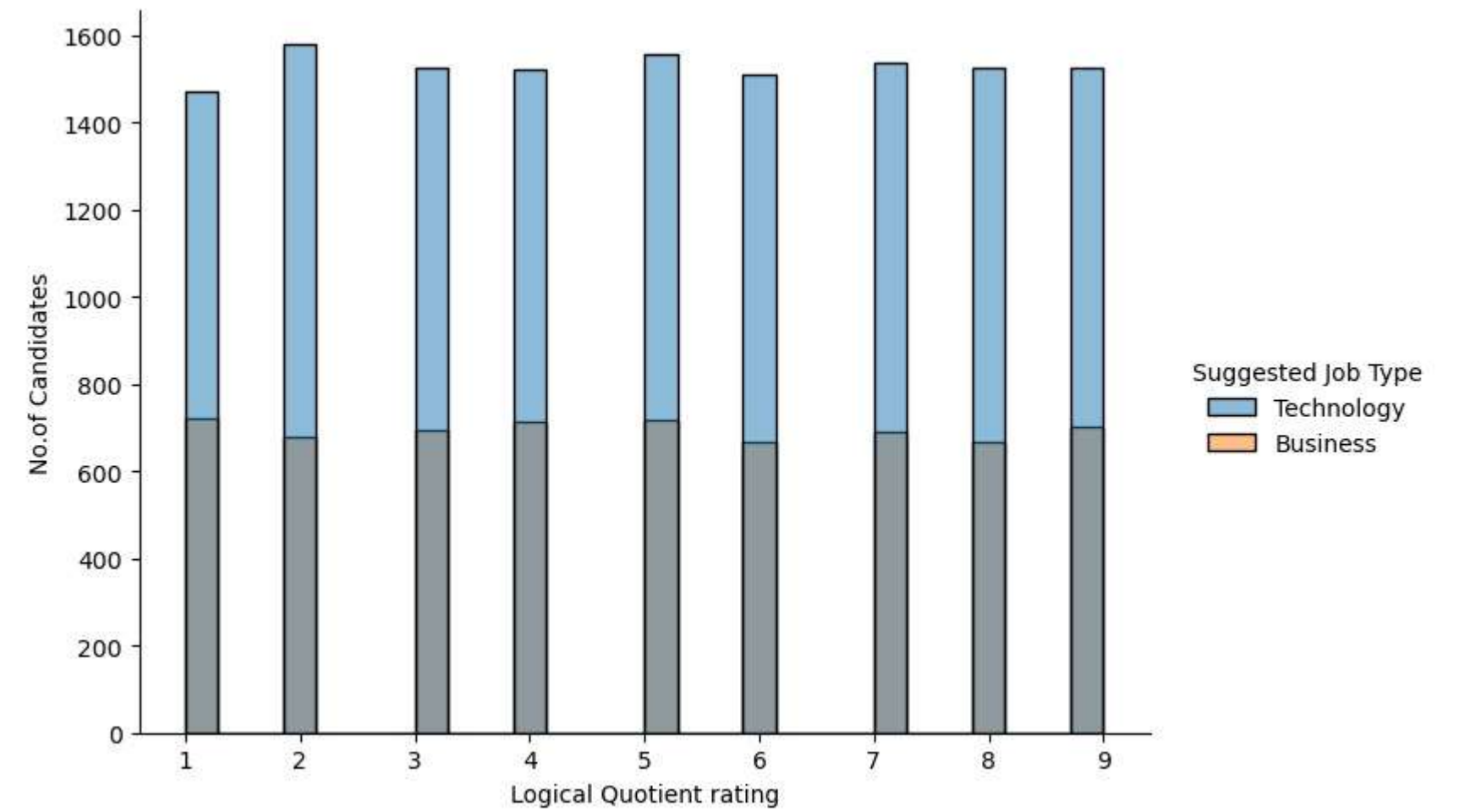
- **Percentage in Computer Architecture** : The Academic score the candidate got in the specific subject



- **Percentage in Software Engineering** : The Academic score the candidate got in the specific subject



- **Percentage in Communication Skills** : The Academic score the candidate got in the specific subject



- **Logical quotient rating** : score derived from a set of standardised tests or subtests designed to assess human intelligence

Auto-ML Methodology Results

Algorithms	Test Accuracy (25 percentile)	Test Accuracy (50 percentile)	Test Accuracy (75 percentile)	Test Accuracy (90 percentile)
Decision Tree	56.15	55.72	55.45	57.95
Random Forest	67.97	68.55	68.6	68.62
XGBoost	64.27	64.57	64.97	63.3
MLP	68.67	68.67	68.67	47.77
GNB	68.67	68.02	67.95	66.62
Total Features	20	40	60	72
Avg. Accuracy	65.146	65.106	65.128	60.852

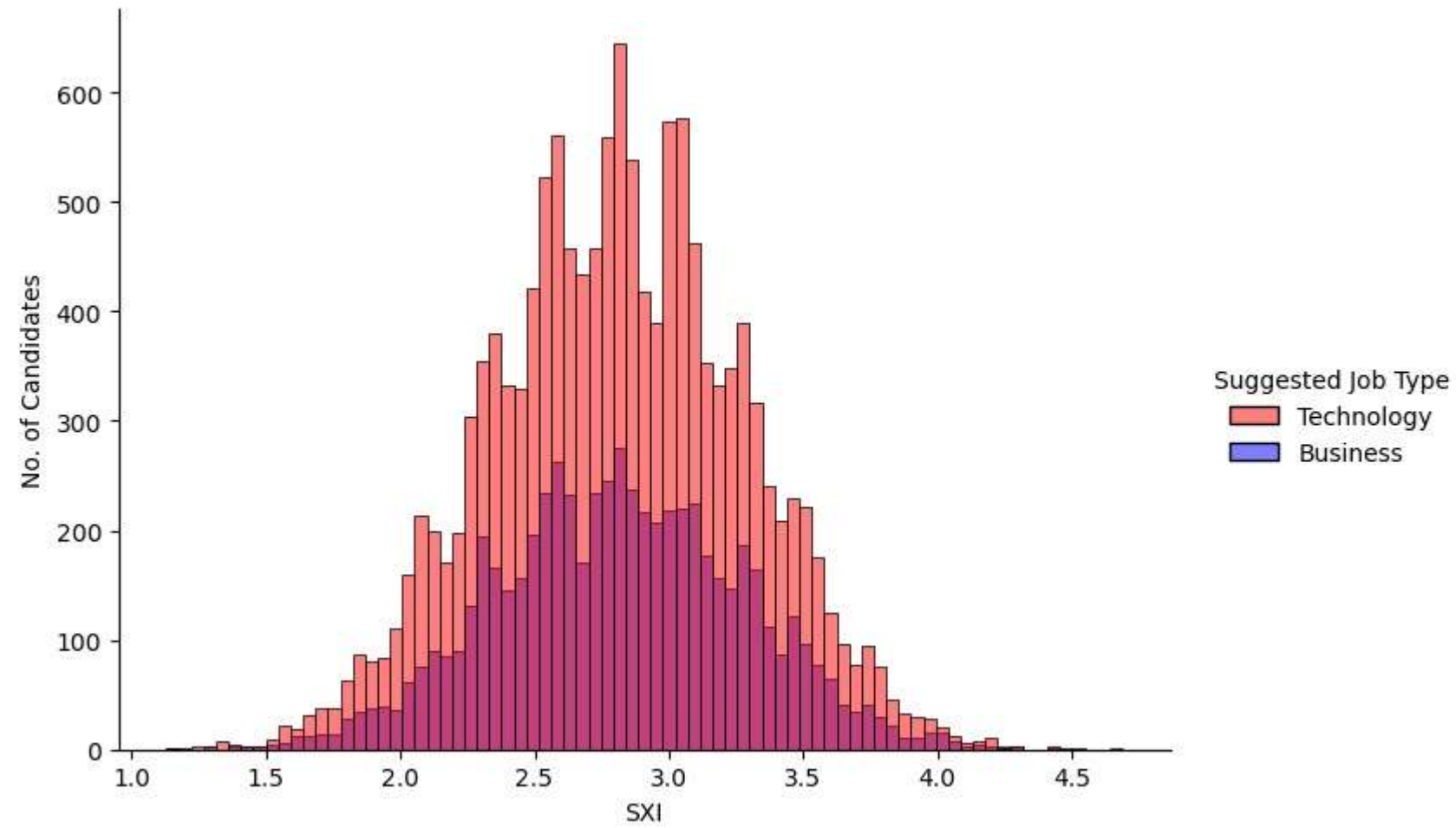
- Based on our observation , MLP and Gaussian Naïve Bayes was the best performing algorithm with 68.67% accuracy in 25th percentile
- 25th percentile is the best percentile with an average accuracy of 65.15%.

Auto-ML Methodology Conclusion

Auto-ML models can help HR professionals to streamline the recruiting process by automating certain tasks such as resume screening and initial candidate evaluation, allowing them to focus on more strategic and personalized aspects of candidate selection. The dataset has 20000 records with 18 Categorical Features and 55 Numerical Features. 68.7% of the dataset shows most of them are Technology candidates.

For classification, models were created with algorithms using Auto-ML techniques like Logistic Regression, Gaussian Naïve Bayes, Multilayer Perceptron, Random forest and XGBoost . With these models, performance measurement values were obtained for feature sets of 20, 40, 60 and 72. The Auto-ML algorithms were able to predict whether a candidate recruitment was based on Technology or Business with an average accuracy between 55% – 70% and helped to identify factors that determine whether a candidate recruitment was based on Technology or Business. The major factors include Percentage in Computer Architecture , Percentage in Software Engineering , Percentage in Communication skills and Logical quotient rating. When the results are examined, it is observed that with the addition of each new feature, the success of classification decreased. Overall, the application of Auto-ML techniques to the HR industry has the potential to revolutionize the recruiting process, providing valuable insights and efficiencies that can help organizations to build diverse and high-performing teams.

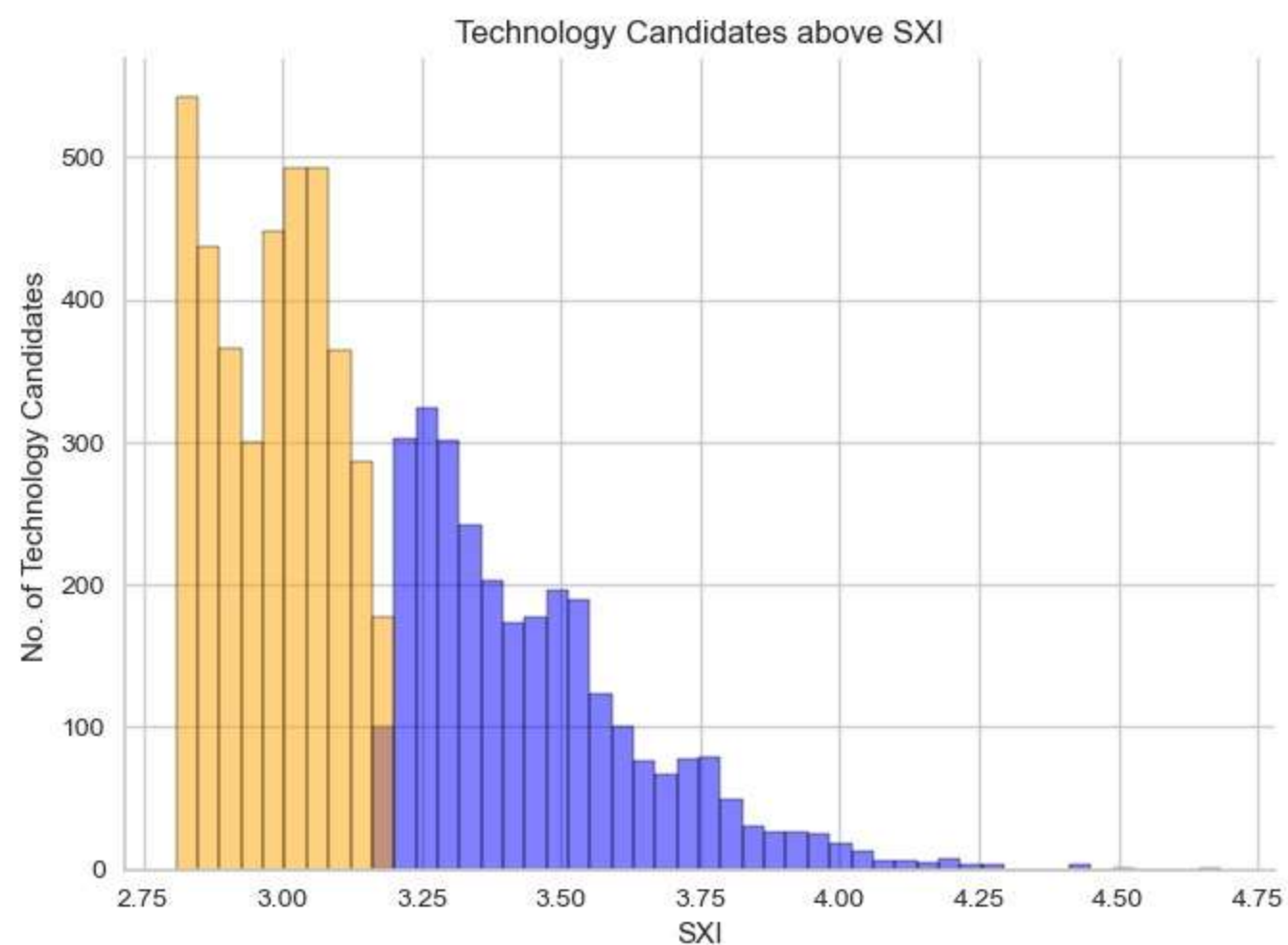
SXI Method



- Brown – Technology Candidates
- Maroon – Business Candidates

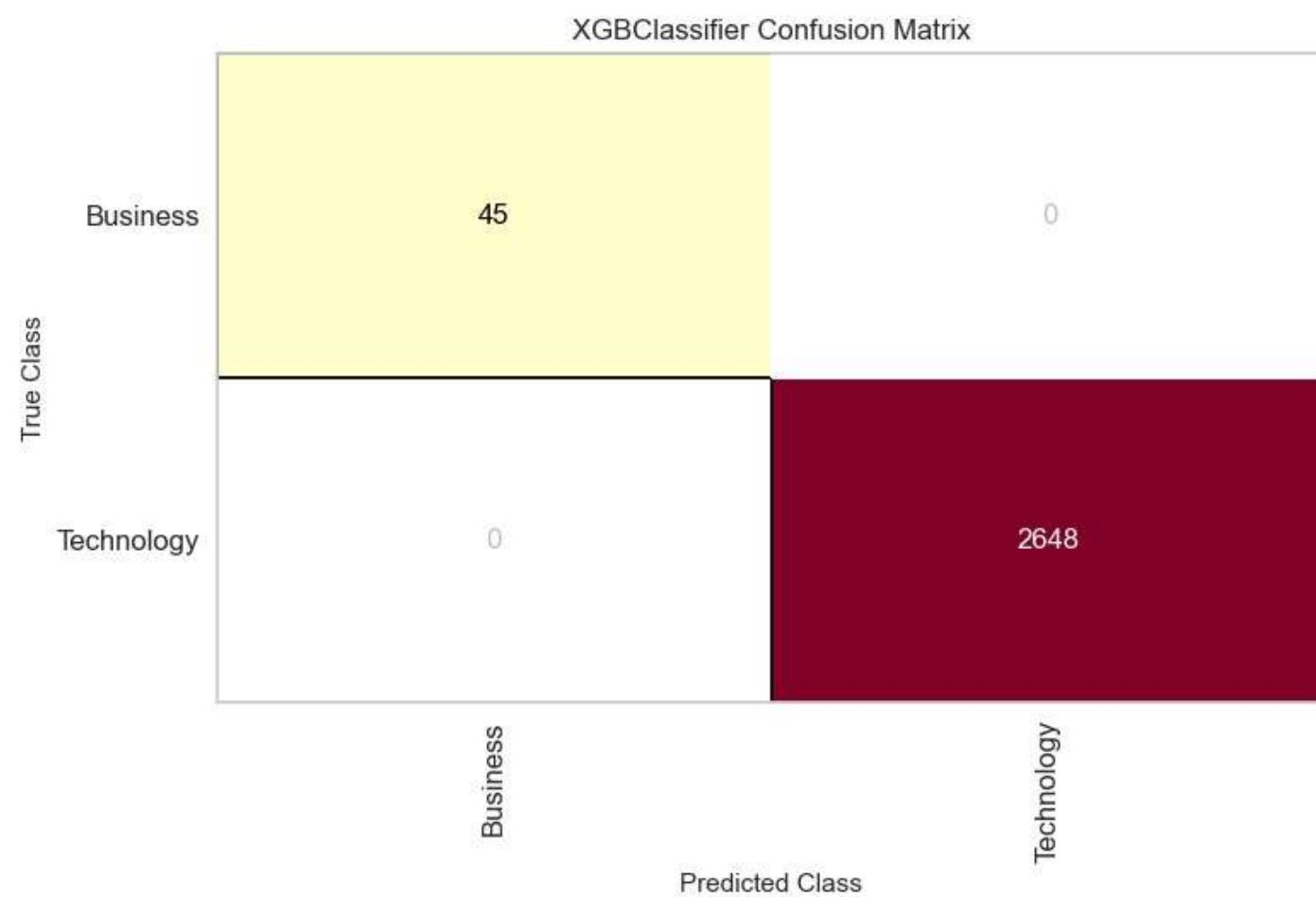
SXI	2.81
Top SXI	4.68
Minimum SXI	1.13
No. of Business candidates above SXI	3130
No. of Business candidates below SXI	3122
No. of Technology candidates above SXI	6869
No. of Technology candidates below SXI	6879
SXI Model Accuracy	98.63

Technology Candidates above SXI



- In order to make the hiring process better, these candidates are one to focus on.
- The average SXI on “Technology Candidates above SXI” is 3.2. Here we further categorize, so Technology candidate’s SXI above 3.2 are the candidates to be focused on in the future.
- Analyzing the trend and academic patterns of these candidates will improve your recruitment process.

SXI Method Accuracy Case 1 is 98%



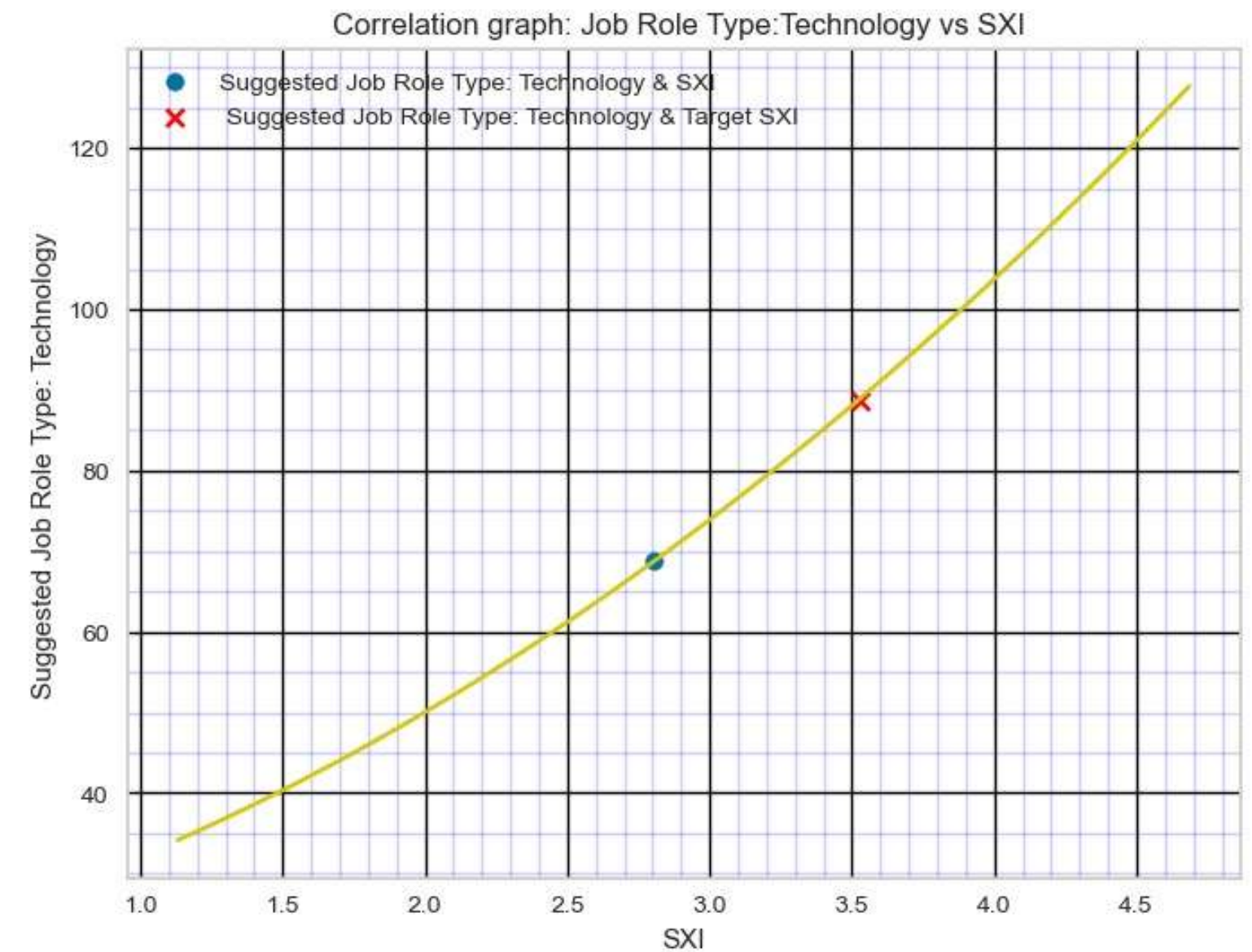
Actual and Predicted was Business Candidate (TP)	2648
Actual and Predicted was Technology Candidate (TN)	45
Actual Subscribed and Predicted Technology Candidate (FN)	0
Actual Not Subscribed Predicted Business Candidate (FP)	0

Train Records	Test Records	Actual Train count for Technology Candidates	Actual train count for Business Candidates	Actual test count for Technology Candidates	Actual test count for Business Candidates	Predicted test count Technology Candidates	Predicted test count Business Candidates	Precision rate	Recall rate	Model Accuracy
10768	2693	10597	171	2648	45	2685	8	0.986	1	0.986

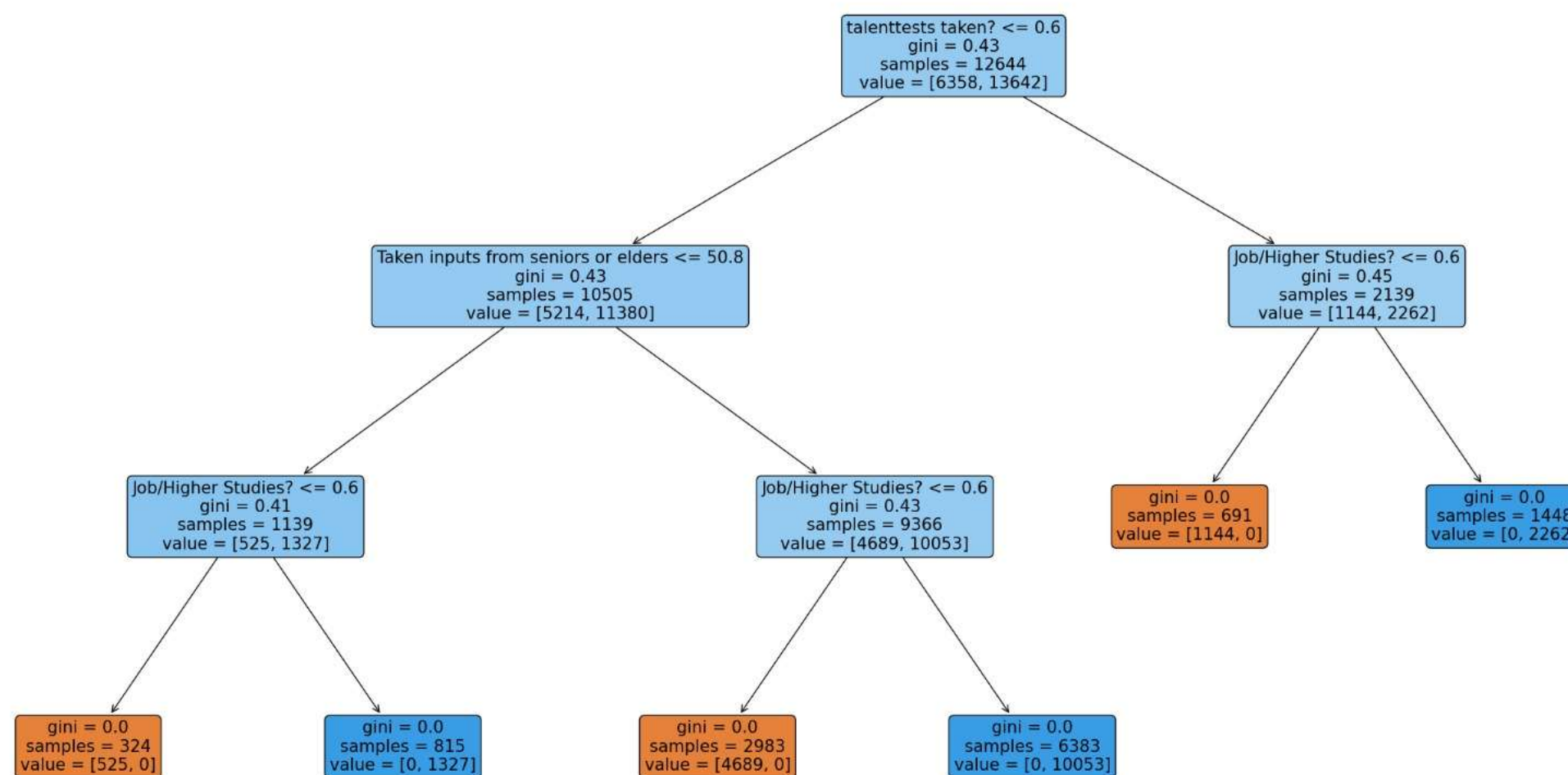
- **Precision rate:** Precision is defined as the ratio of actual Business Candidate (True Positive) to a total number of predicted Business Candidate . $TP / (TP + FP)$
- **Recall rate:** The recall is calculated as the ratio between the Actual numbers of Business Candidate to the total number of wrongly predicted Business Candidate as Technology Candidate plus actual number of Business Candidate . $TP / (TP + FN)$
- **Model Accuracy:** It is the fraction of predictions where the model got right. $(TP + TN) / (TP + FP + TN + FN)$

SXI Method - Results

SXI	2.81
Current Job Role for Technology	68.7 %
Target SXI for Technology	3.53
Target Job Role Conversion for Technology	88.74 %



The correlation between SXI and Suggested job role is **0.95**



Tree - Interpretation

- Talent test taken <= 50% probability
- Taken inputs from seniors or elders <= 50.8%
- Job/Higher Studies? = 60% probability of selecting Job leads to recruiting Technology Candidates