**Findings and Recommendations**

# **1. Introduction:**

- The analysis is to predict employee churn using the HR dataset.

# **2. Data Overview:**

- The dataset contained information about employees, including their departments, salaries, and whether they left the company.

**The dataset contains 14999 rows and 9 Columns**

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# **4. Exploratory Data Analysis:**

- Initial exploration revealed that a significant proportion of employees had left the company.

- I visualised the distribution of the target variable to understand the churn rate 1991 employees had already left the company.

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# **5. Feature Engineering:**

- Numerical features were scaled using StandardScaler.

, - categorical features were encoded to

-Encoding ensures compatibility with machine learning algorithms.

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# **6. Model Training and Evaluation:**

- I split the data into training and testing sets to evaluate model performance.

- Several models were trained: Logistic Regression, Decision Tree, Random Forest, and XGBoost.

- Models were evaluated using accuracy, precision, and recall metrics to determine their effectiveness.

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# **7. Findings:**

- Logistic Regression: Provided a baseline with moderate accuracy but loIr precision and recall.

- Decision Tree: ShoId high variance, indicating potential overfitting.

- Random Forest: Balanced model with better accuracy, precision, and recall compared to Logistic Regression and Decision Tree.

- XGBoost: Outperformed other models with the highest accuracy, precision, and recall, making it the best model for predicting churn.

# **8. Recommendations:**

- Model Deployment: Based on our evaluation, I recommend deploying the XGBoost model for predicting employee churn.

- Further Analysis: Conduct deeper analysis on feature importance to identify key factors contributing to churn. This can inform HR strategies to improve employee retention.

- Regular Monitoring: Implement a system to regularly monitor model performance and update it with new data to maintain accuracy.

By implementing these recommendations, I can better predict employee churn and develop targeted strategies to retain valuable employees, ultimately reducing turnover costs and improving organizational stability.