**Employee Attrition Analysis Report Mohamed Hadadi**

**Introduction**

Employee attrition, or turnover, is a critical concern for organizations as it impacts productivity, morale, and costs. This report analyzes the factors contributing to employee attrition within the company. Our objective is to identify key determinants of attrition and provide actionable insights to improve employee retention.

**Data Overview**

 Data **Cleaning**: Missing values were handled, and categorical variables were encoded.

 Exploratory **Data Analysis (EDA)**: Descriptive statistics and visualizations were used to understand the data distribution and relationships.

 Modeling: Various machine learning models (e.g., Logistic Regression, Decision Trees, Random Forest) were applied to predict employee attrition.

 Evaluation: Models were evaluated using metrics such as accuracy, precision, recall, and F1-score.

**Key Findings**

Attrition

83.88 % Negative attrition

16.12% Positive attrition

Insights: data is imbalanced

**Martial Status and Attrition**

In the case of Negative attrition, the Married cases are more likely to leave the company followed by the Single then the Divorced.

In the case of Positive attrition, the Single cases are more likely to leave the company followed by the Married then the Divorced.

**Gender and Attrition**

Male are more likely to leave the company compared to females.

**Conclusions**

This analysis reveals several factors that significantly impact employee attrition. Gender and marital status show distinct patterns in attrition rates. Work-life balance and job satisfaction are critical factors, with lower ratings in these areas correlating with higher attrition.

**Recommendations**

 **Improve Work-Life Balance**: Implement flexible working hours and remote work options to improve work-life balance.

 **Enhance Job Satisfaction**: Conduct regular surveys to gauge job satisfaction and address concerns promptly.

 **Focus on Single Employees**: Develop targeted retention strategies for single employees who are at a higher risk of attrition.

 **Support Female Employees**: Ensure gender-specific support systems are in place to address the slightly higher attrition rate among female employees.

 **Enhance Job Satisfaction**: Providing bonus to employees who have families can encourage them to stay in the company

Working more on the Research and Development department because there is high rate of attrition from there.

Analysis concerning the total working years shows that employees tend to leave the company after an average of 8 years so the company may provide bonus to employees who worked more than this average.

Another factor to consider is the distance from Home. Analysis on the positive attrition show that people who leave spend on average 10 km to reach the place of work.