

# EMPLOYEE ATTRITION ANALYSIS & HIGH-RISK PREDICTION PROJECT REPORT

## 1. Business Problem

GreenDestination is facing increasing employee attrition, causing rising hiring costs, loss of experienced staff, and reduced productivity.

The HR department wants to understand:

- Why employees are leaving
- Which employees are at highest risk
- What factors influence attrition
- What actions can reduce turnover

## 2. What We Solved

We built a complete analytical system that:

- Identifies why employees leave
- Predicts who is most likely to leave (High-Risk Score)
- Analyzes salary, job satisfaction, overtime, and work-life balance
- Gives management actionable insights using Power BI and Python

## 3. Tools Used

- Python: Pandas, NumPy, Seaborn, Matplotlib, Scikit-Learn
- Power BI: DAX, KPI cards, visuals, data modeling
- Excel/CSV for dataset
- Report documentation

## 4. Python EDA & ML Model Explanation

EDA Steps:

- Cleaned and transformed raw data
- Visualized distributions and correlations
- Found patterns linked to attrition

#### Key Findings:

- Overtime strongly increases attrition
- Low salary employees leave more
- Low job satisfaction and poor work-life balance drive attrition
- Employees with <3 years tenure leave at higher rates

#### ML Model:

- Random Forest classifier
- Trained on 75% data, tested on 25%
- Identified key features influencing attrition

#### High Risk Score:

- Calculated using overtime, low satisfaction, low income, poor WLB, and tenure
- Categorized into Low, Medium, High Risk employees

### 5. Power BI Dashboard – Page-by-Page Explanation

#### Page 1: Executive Summary

- Shows high-level KPIs like attrition rate and total employees
- Department & role-based attrition visuals
- Helps leadership monitor workforce stability

#### Page 2: Why Employees Leave

- Trend charts showing age, income, and tenure impact
- Charts showing effect of overtime and satisfaction
- Heatmap showing job role + overtime risk

#### Page 3: Salary & Job Level Insights

- Salary distribution using income bins

- Attrition by job level
- Average income by job role
- Helps HR identify pay-related issues

#### Page 4: High-Risk Employees

- KPI: Total High Risk Employees
- Table showing each employee with High Risk Score
- Bar chart showing high-risk distribution by department
- Scatter plot: Salary vs Risk Score

#### Page 5: HR Recommendations

- Reduce overtime
- Improve salary for low-income roles
- Strengthen onboarding for new employees
- Provide support to low-satisfaction teams
- Improve work-life balance and employee engagement

#### 6. What HR & Management Can Do with This Dashboard

- Detect early warning signs of attrition
- Improve retention policies
- Reduce recruitment cost
- Boost productivity
- Make data-driven HR decisions
- Compare departments and roles for risk levels