HR Attrition Analysis Project Report

1. Project Overview

Employee attrition, also known as employee turnover, is a critical issue for organizations as it impacts productivity, morale, and operational costs. This project aims to analyze HR data to identify patterns and factors leading to employee attrition and provide actionable insights for management.

2. Objectives

- Analyze employee attrition patterns in the organization.

- Identify key factors contributing to employee turnover.

- Provide insights to improve employee retention.

- Create visualizations to communicate findings effectively.

3. Dataset Description

The dataset contains employee information such as demographics, job details, and performance indicators. Typical columns include:

- EmployeeID: Unique identifier for each employee

- Age: Employee age

- Gender: Male/Female

- Department: Department of the employee

- JobRole: Specific job role

- Education: Education level

- MaritalStatus: Marital status

- YearsAtCompany: Total years spent at the company

- MonthlyIncome: Monthly salary

- JobSatisfaction: Job satisfaction level (1-4)

- WorkLifeBalance: Work-life balance rating (1-4)

- OverTime: Yes/No for overtime

- Attrition: Target variable: Yes/No

4. Data Cleaning

- Checked for missing values and handled them.

- Converted categorical variables into numeric codes for analysis.

- Ensured no duplicate records exist.

- Standardized column names.

5. Exploratory Data Analysis (EDA)

5.1 Attrition Rate

- Total Employees: 1470

- Employees Left: 237

- Attrition Rate: 16%

5.2 Attrition by Department

- Highest attrition in Sales Department.

- Lowest attrition in Research & Development.

5.3 Key Factors Analysis

- Age: Younger employees more likely to leave.

- Years at Company: Employees with 1-3 years at the company have higher attrition.

- Job Role: Certain roles like Sales Executive show higher attrition.

- OverTime: Employees working overtime have higher attrition.

- JobSatisfaction: Lower job satisfaction leads to higher attrition.

5.4 Correlation Analysis

- High correlation between JobSatisfaction, WorkLifeBalance, and Attrition.

- Moderate correlation between Overtime and Attrition.

- Low correlation between Education and Attrition.

6. Insights

1. Employees with low job satisfaction and poor work-life balance are at higher risk of leaving.

2. Younger employees and those with less than 3 years in the company show higher attrition rates.

3. Departments with high customer interaction, like Sales, have higher turnover.

4. Employees working overtime are more likely to leave.

7. Recommendations

- Implement employee engagement programs to increase job satisfaction.

- Introduce flexible working hours to reduce overtime stress.

- Focus retention strategies on high-risk groups, such as younger employees in sales roles.

- Conduct exit interviews to understand reasons for leaving.

- Introduce mentorship programs for employees in early years.

8. Conclusion

This analysis provides actionable insights into employee attrition patterns. By targeting key factors such as job satisfaction, work-life balance, and overtime, organizations can develop strategies to reduce turnover and retain top talent.

9. Future Work

- Predictive modeling: Build a machine learning model to predict attrition.

- Deep dive into employee performance metrics.

- Analyze impact of compensation and benefits on retention.