Employee Attrition Analysis - Detailed Project  
Report  
  
This project focuses on understanding the factors leading to employee attrition in an organization.  
Attrition, or employee turnover, refers to employees leaving a company either voluntarily or  
involuntarily. By studying key patterns within the dataset, the project aims to identify the main  
reasons for attrition and suggest effective retention strategies.  
Objective:  
The primary objective of this project is to analyze employee data and find patterns that influence  
attrition. It focuses on various attributes such as Age, Gender, Department, Job Satisfaction, Years  
at Company, Monthly Income, and Performance Rating to determine how they impact attrition rates.  
Dataset Overview  
The dataset contains 14 employee records with 13 columns. It includes demographic, professional,  
and behavioral attributes that help in understanding employee behavior. There are 52 missing  
values that require preprocessing.  
Column Name  
Description  
EmployeeID  
Unique ID assigned to each employee  
Age  
Age of the employee in years  
Gender  
Employee gender (Male/Female)  
Department  
Department where the employee works  
JobRole  
Specific role or designation of the employee  
Education  
Education background of the employee  
JobSatisfaction  
Satisfaction level of employee (1–4 scale)  
MaritalStatus  
Marital status (Single/Married/Divorced)  
YearsAtCompany  
Total number of years the employee has worked at the company  
MonthlyIncome  
Employee’s monthly income  
OverTime  
Whether the employee works overtime (Yes/No)  
PerformanceRating  
Employee performance rating (1–5 scale)  
Attrition  
Indicates if the employee left the company (Yes/No)  
Methodology  
The project followed a structured approach as described below:  
1. Data Collection: The dataset was provided in CSV format containing 14 employee records.  
2. Data Cleaning: Missing values were checked and handled appropriately. Text and categorical  
values were standardized for analysis.  
3. Exploratory Data Analysis (EDA): Statistical summaries, distributions, and correlations were  
examined to find trends and patterns in attrition.  
4. Visualization: Graphs such as bar charts and pie charts were used to visualize job satisfaction,  
  
income levels, and overtime impact on attrition.  
5. Model Building: Machine learning models such as Logistic Regression and Decision Trees were  
tested to predict whether an employee is likely to leave.  
6. Evaluation: Model performance was measured using accuracy and precision metrics.  
Analysis and Key Insights  
After analyzing the data, several trends were identified:  
 Employees with high overtime hours are more likely to leave.  
 Job satisfaction and income levels have a strong inverse relationship with attrition.  
 Younger employees (below 30) tend to have higher attrition rates.  
 The Sales department has the highest attrition among all departments.  
 Married employees show higher stability compared to single employees.  
 Employees with fewer years at the company (less than 3 years) have greater attrition risk.  
Recommendations  
Based on the findings, the following steps are suggested to reduce attrition:  
1. Implement better work-life balance policies to reduce overtime fatigue.  
2. Offer salary increments or bonuses to improve job satisfaction.  
3. Encourage career development and training opportunities.  
4. Conduct regular employee engagement surveys.  
5. Provide recognition programs to appreciate top performers.  
6. Focus on early retention programs for new joiners.  
Conclusion  
The employee attrition analysis provided valuable insights into key factors influencing employee  
turnover. By addressing issues related to job satisfaction, income disparity, and overtime  
management, organizations can improve retention rates and create a more positive work culture.  
The project demonstrates how data analytics can be leveraged to support human resource  
decision-making.  
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