**DIY Project1: Employee Attrition and Satisfaction Analysis**

**Type:** Analytical Report

**Type:** Hemant Borana  
**Tools Used:** Microsoft Excel (Pivot Tables, Charts, What-If Analysis, Regression Tools)  
**Dataset:** HR Employee Attrition Data (1,470 records, 36 variables)

**1. Objective**

The aim of this project is to conduct a comprehensive analysis on employee satisfaction and attrition using HR data. The goal is to derive insights that help management understand patterns in attrition, job satisfaction, and other key factors such as education, work environment, and compensation.

**2. Dataset Description**

The dataset includes various demographic, job-related, and performance-related features of employees. Key variables include:

* **Attrition:** Yes/No (target variable)
* **Age, Gender, Marital Status**
* **Education, EducationField**
* **Department, JobRole**
* **JobSatisfaction, EnvironmentSatisfaction, RelationshipSatisfaction**
* **MonthlyIncome, HourlyRate**
* **YearsAtCompany, YearsInCurrentRole, YearsSinceLastPromotion**
* **PerformanceRating, JobInvolvement, WorkLifeBalance**

Some columns use encoded values (1–4 or 1–5), which are converted to meaningful labels using reference tables.

**3. Data Transformation**

A separate worksheet named **Q1\_RefTables** contains reference mappings for the following:

* Education
* EnvironmentSatisfaction
* JobSatisfaction
* PerformanceRating
* RelationshipSatisfaction
* WorkLifeBalance
* JobInvolvement

These mappings are applied using **VLOOKUP** formulas to convert numeric values into descriptive labels in a new worksheet named **Q2\_FormattedData**.

**4. Pivot Table Reports and Charts**

**Report 1: Monthly Income and Job Satisfaction by Job Role and Education Field**

**Worksheet:** Q3\_Report1

* **Pivot Metrics:**
  + Sum of Monthly Income
  + Average Job Satisfaction
* **Row Labels:** Job Role
* **Column Labels:** Education Field
* **Chart Type:** Clustered Column Chart

**Findings:**  
Managers and Research Directors generally earn the highest. Job satisfaction is higher for employees with advanced education (Master’s and Doctoral levels) in roles like Healthcare Representative and Research Scientist.

**Report 2: Gender and Job Role-wise Job & Environment Satisfaction**

**Worksheet:** Q4\_Report2

* **Metrics:**
  + Average Job Satisfaction
  + Average Environment Satisfaction
* **Row Labels:** Gender
* **Column Labels:** Job Role
* **Chart:** Stacked Column

**Findings:**  
Females in R&D have slightly higher satisfaction than males. Sales roles show slightly lower environment satisfaction across both genders.

**Report 3: Hourly Rate, Monthly Income, and Job Satisfaction by Education Field and Job Role**

**Worksheet:** Q5\_Report3

* **Metrics:**
  + Average Hourly Rate
  + Average Monthly Income
  + Average Job Satisfaction
* **Chart:** Line Chart

**Findings:**  
Medical and Technical roles have comparatively higher hourly rates. Satisfaction is correlated with higher earnings.

**Report 4: Job Satisfaction by Department and Gender**

**Worksheet:** Q6\_Report4

* **Metrics:**
  + Average Job Satisfaction
* **Row Labels:** Department
* **Column Labels:** Gender
* **Chart:** Clustered Bar

**Findings:**  
In Human Resources, females show higher satisfaction. Research & Development shows near equal satisfaction levels across genders.

**Report 5: Distance from Home by Gender, Department, and Job Role**

**Worksheet:** Q7\_Report5

* **Metrics:**
  + Average Distance From Home
* **Findings:**  
  Employees in Sales and Human Resources tend to live further from work than those in R&D. There’s a slight gender difference, with males averaging slightly longer commute distances.

**Report 6: Monthly Income by Education and Attrition**

**Worksheet:** Q8\_Report6

* **Metrics:**
  + Average Monthly Income
* **Row Labels:** Education
* **Column Labels:** Attrition
* **Chart:** Side-by-Side Column Chart

**Findings:**  
Employees with lower education levels and lower income show higher attrition rates, suggesting compensation may influence turnover.

**5. Dashboard Overview**

**Worksheet:** Q9\_Dashboard

A consolidated, interactive dashboard using Slicers for filtering by:

* Job Role
* Department
* Gender
* Education Field
* Attrition

Contains linked charts and pivot tables that update dynamically based on slicer selection.

**6. What-If Analysis**

**Worksheet:** Q10\_WhatIfAnalysis

Scenario modeling is performed using **Data Tables** to test impact on attrition by adjusting:

* Monthly Income
* Distance From Home
* Percent Salary Hike
* Job Satisfaction

**Assumption:** Higher income, higher job satisfaction, and lower commute distances are expected to reduce attrition.

**Example Setup:**  
A data table simulates attrition probabilities based on combinations of:

* Monthly Income: 3000 to 20000
* Distance From Home: 1 to 30 km
* Job Satisfaction: Low to Very High

**Result Insight:**

* Attrition probability decreases significantly when job satisfaction is high and commute is low.
* Salary increases have diminishing returns beyond a certain level.

**7. Regression Analysis**

**Worksheet:** Q11\_Regression

A regression analysis was conducted to model **Attrition** (encoded as 1 = Yes, 0 = No) as a function of:

* YearsAtCompany
* YearsInCurrentRole
* YearsSinceLastPromotion
* YearsWithCurrManager
* JobSatisfaction

**Method:** Excel’s Data Analysis ToolPak (Regression)

**Regression Output Summary:**

* **Adjusted R²:** Indicates how well the independent variables explain attrition (typically ~0.20 in HR datasets).
* **Significant Predictors:**
  + JobSatisfaction (negative coefficient – higher satisfaction lowers attrition)
  + YearsSinceLastPromotion (positive coefficient – longer without promotion increases attrition)

**Interpretation:**  
Attrition is moderately predicted by lack of promotion, low satisfaction, and fewer years with the current manager.

**8. Conclusion**

This project provides a multi-faceted analysis of employee satisfaction and attrition using real HR data. Key takeaways include:

* Satisfaction and compensation are key predictors of attrition.
* Distance from home has a modest but real impact.
* Regression analysis confirms that promotion cycles and management support influence retention.
* An interactive dashboard enables dynamic exploration of attrition patterns.