Power BI HR Analytics Dashboard – Project Summary

Introduction

This project focuses on analyzing employee attrition using Power BI to assist HR teams in making data-driven decisions. The dashboard delivers clear insights into employee behavior, attrition patterns, and workforce trends.

Problem Statement

Employee attrition is a critical challenge for organizations, impacting productivity and increasing costs. The objective of this project is to identify key factors contributing to attrition and enable management to implement strategies that reduce employee turnover.

Dataset Description

The dataset includes HR employee records with attributes such as age, gender, department, salary, job role, years of experience, and attrition status. The data is sourced from a CSV file ("WA_Fn-UseC_-HR-Employee-Attrition.csv") containing 1470 records.

Key statistics from the dataset:

- Total Employees: 1470
- Employees Who Left (Attrition = Yes): 237 (16.12%)
- Employees Who Stayed (Attrition = No): 1233 (83.88%)

Tools & Technologies

- Power BI for visualization and dashboard creation
- Power Query for data cleaning and transformation
- DAX for calculations and measures
- Excel for initial data exploration
- Python (via pandas) for supplementary analysis in this summary

Data Cleaning & Transformation

Data cleaning was conducted using Power Query:

- Removed duplicate records
- Handled missing values
- Corrected data types
- Created calculated columns (e.g., for attrition rates, tenure categories) to facilitate analysis

Dashboard Overview

The dashboard consists of multiple pages:

- **Overview Page**: Displays key performance indicators (KPIs) such as overall attrition rate, total employees, and high-level trends.
- **Detailed Analysis Page**: Breaks down attrition by department, demographics (age, gender), job role, and other factors.
- **Insights Page**: Highlights actionable findings with visualizations like charts and graphs.

Key Insights

Based on analysis of the dataset:

- **Departmental Attrition**: Sales shows the highest attrition rate at 20.6%, followed by Human Resources at 19.0%, and Research & Development at 13.8%. This suggests targeted retention efforts in Sales and HR.
- **Salary Impact**: Employees who left had an average monthly income of $4,787, compared to $6,833 for those who stayed, indicating that lower salaries are a significant factor in attrition.
- **Tenure and Experience**: Attrition rates are highest in the early years at the company—36% in the first year (Year 0), 35% in Year 1, and 21% in Year 2—before declining. Similarly, for total working years, rates peak at around 49% for 1 year of experience and decrease with more seniority. This highlights the need for better onboarding and early-career support to reduce turnover after 1-2 years.

Insight Category	Details
Attrition Rate by Department	Sales: 20.6% Human Resources: 19.0% Research & Development: 13.8%
Average Monthly Income	Stayed: $6,833 Left: $4,787
Attrition Rate by Years at Company (Top Peaks)	Year 0: 36.4% Year 1: 34.5% Year 2: 21.3% Year 3: 15.6%
Attrition Rate by Total Working Years (Top Peaks)	1 Year: 49.4% 0 Years: 45.5% 2 Years: 29.0% 3 Years: 21.4%

Business Impact

This dashboard empowers HR teams to:

- Identify high-risk groups (e.g., low-tenure employees in Sales).
- Develop targeted retention strategies, such as salary adjustments or career development programs.
- Inform workforce planning, potentially reducing turnover costs and improving overall productivity.

Conclusion

This Power BI HR Analytics project showcases proficiency in data cleaning, visualization, business analysis, and insight generation. It is an excellent addition to portfolios or for demonstrating skills in interviews, highlighting the ability to turn raw HR data into strategic recommendations.