Employee-Attrition-Analysis-and-Prediction

This project aims to provide insights into the factors influencing employee attrition and predict which employees are likely to leave the company. Let's refine the project to make it more closely aligned with real-time scenarios and address live problem statements within an organization.

Problem Statement:

Acme Corporation, a leading tech company, is facing a significant challenge with employee turnover. The HR department is concerned about the increasing rate of attrition, as it negatively impacts team dynamics, project continuity, and overall company morale. To address this issue, Acme Corporation wants to leverage data analytics and machine learning to understand the factors influencing employee attrition and predict which employees are likely to leave in the near future.

Dataset:

Acme Corporation has provided historical data on employee demographics, job satisfaction, work environment, performance metrics, and turnover status. This dataset spans the last five years and includes information on employees who have left the company and those who are still currently employed.

Technologies Used:

Advanced Excel, Python and Power BI

Steps Followed:

1. Understanding Problem: Defined the scope of the analysis, focusing on attrition, average salary, and working years at company.
2. Data Gathering and Transformation: Collected the employee data from the provided Excel file and utilized ETL operations to clean and transform the data into a suitable format for analysis.
3. Creating Metrics using DAX: Implemented Data Analysis Expressions (DAX) to create key metrics, including active employees and attrition rate.
4. Dashboarding with Power BI Desktop: Utilized Power BI Desktop to visualize the data and create interactive dashboards and developed visualizations to provide insights into attrition by gender, salary, job role, education and more.

Project Outcome:

The analysis presented in this dashboard will empower Acme Technologies to make data-driven decisions regarding employee attrition strategies. By understanding reasons for attrition, the company can implement targeted actions to improve employee satisfaction and well-being.

Feel free to explore the dashboard and leverage the insights for HR planning and decision-making.

Dashboard Overview:

The Employee Attrition Analysis Dashboard project using Power BI is designed to provide insights into key metrics and trends related to human resource management in an organization. The dashboard utilizes visualizations and data analysis techniques to help HR professionals identify patterns and make data-driven decisions. The dashboard includes several key visualizations that provide a comprehensive overview of attrition by gender, salary, job role, education and more.

The dashboard also includes interactive features that allow users to filter and drill down into specific department. This provides HR professionals with a more detailed view of their data, allowing them to identify patterns and trends more easily.

Overall, HR Analytics Dashboard project using Power BI is an essential tool for any HR professional looking to gain deeper insights into their organization's HR data. By leveraging the power of Power BI's data visualization and analysis tools, HR professionals can make data-driven decisions that can help drive organizational success.

Dashboard Content:

1st Sheet: KPI of Employee Count, Attrition Count, Attrition Rate, Active Employees, Average Age, Average Salary and Average Years.

As evident from the Key Performance Indicators (KPIs) derived from the dataset, the attrition rate within Acme organization stands at 16.12%, notably lower than the industry average of 37%. This translates to a total of 237 employees who voluntarily departed within the analysed timeframe. Additionally, the average salary of departing employees is $6.5k, marking an essential metric to consider when evaluating the impact of attrition on workforce dynamics and financial aspects.

2nd Sheet: Attrition by Gender (Tree Map)

The visualization provided by the tree map graph distinctly illustrates the departure trends categorized by gender within the company. Among the segmented departures, it is evident that the highest count comprises 140 males leaving the organization, representing the most substantial portion. In contrast, the departing female segment reveals a notably lower count, with only 79 individuals leaving.

Potential reasons might include differences in career priorities, workplace satisfaction levels, varying job roles or departments, potential gender-specific challenges or opportunities within the company, or differing responses to organizational changes or policies.

3rd Sheet: Attrition by Education (Donut Chart)

I opted for a donut chart to depict the diversity in employees' educational backgrounds due to its clarity in presenting individual segments distinctly. Upon analysis, it's evident that the majority of departing individuals, totalling 38%, come from a Life Science educational background. Following closely behind are those from medical backgrounds, constituting the next significant portion. Notably, individuals with marketing qualifications contribute to a considerable percentage of departures. Conversely, those with technical degrees represent the smallest fraction in the chart, accounting for only 14% of the total.

4th Sheet: Attrition by Age Group (Bar Graph)

The bar graph illustrates that the age group between 26 and 35 years old exhibits the highest number of departing employees, comprising 116 individuals, as depicted by the chart. Following this demographic, the age bracket of 18 to 25 years old reflects a departure count of 44 individuals. Conversely, the age group of 55 and above indicates the least number of departures among the analysed segments. This data exaggerates the necessity for targeted retention strategies specifically tailored to address the concerns and aspirations of younger employees. Initiatives focusing on career development, mentorship, and work-life balance might resonate well within these age brackets.

5th Sheet: Attrition by Work-Life Balance (Line Chart)

The line graph illustrates that the better work-life balance exhibits the highest number of departing employees, comprising 127 individuals, as depicted by the chart. Following this demographic, the good work-life balance reflects a departure count of 58 individuals. Conversely, the bad work-life balance indicates the least number of departures among the analysed segments.

6th Sheet: Job Satisfaction Rating (Matrix)

The matrix illustrates job satisfaction rating of each job role based on attrition rate reveals employees having high satisfaction rating has highest number of departures, comprising 73 individuals. Following this, low satisfaction rating reflects a departure of 66 individuals. Conversely, the medium satisfaction rating indicates the least number of departures among the analysed segments.

7th Sheet: Attrition by Salary Range (Vertical Bar Graph)

The vertical bar graph of attrition rates based on salary brackets reveals employees receiving salaries up to $5,000 constitute the demographic with the highest attrition, totalling 163 individuals. Subsequently, the 5–10k salary bracket demonstrates the next considerable attrition rate, whereas those earning salaries of $15,000 or more exhibit the lowest departure rates.

8th Sheet: Attrition by Years at Company (Area Chart)

The area chart of attrition rates relative to years of experience, a distinct pattern emerges. Employees with 10 years of experience display a notably lower attrition rate, comprising a total of 18 individuals, contrasted with the higher attrition observed among employees with 0–3 years of experience, totalling 59 departures.

9th Sheet: Attrition by Marital Status (Pie Chart)

The pie chart of attrition rates relative to years of experience, a distinct pattern emerges. Employees with single status display a notably higher attrition rate of 50.6%, contrasted with the lower attrition observed among divorced employees with 13.9%

10th Sheet: Attrition by Job Role (Vertical Bar Graph)

The vertical bar graph of attrition rates based on job role reveals employees have Laboratory Technician with the highest attrition, totalling 62 individuals. Subsequently, Sales Executive role demonstrates the next considerable attrition rate.