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Project Title :- HR Analytics - Predict Employee Attrition

➢ Introduction

In today's competitive business environment, managing and retaining skilled employees is a key challenge for HR departments. Employee attrition not only leads to increased recruitment costs but also affects team productivity and morale. This project aims to analyse employee data to uncover patterns and factors influencing attrition using data analytics techniques.

By leveraging Tableau for data visualization, we explored key metrics such as age, job satisfaction, gender, and job level to identify trends and high-risk segments. This analysis helps HR professionals make data-driven decisions to improve retention strategies and employee engagement.

➢ Abstract

This project focuses on analysing employee attrition using HR analytics to identify key factors contributing to voluntary turnover. By processing cleaned HR data and visualizing it through Tableau dashboards, we uncover patterns related to age, gender, job level, job satisfaction, and other variables. The insights derived from this analysis aim to support HR teams in developing targeted retention strategies. The final interactive dashboard provides a comprehensive overview of attrition trends, enabling better workforce planning and decision-making based on data-driven evidence.

➢ Tools Used

1. **Python (Pandas & NumPy):**
   Used for initial data cleaning, preprocessing, and formatting the HR dataset for analysis.
2. **Spyder (IDE):**
   Environment for executing Python code, visualizing intermediate outputs, and exporting the cleaned dataset.
3. **Tableau:**
   Main tool used for creating interactive and insightful dashboards, visualizing attrition trends across various factors.

➢ Steps Involved in Building the Project

1. **Problem Understanding**
   Defined the goal of the project – to analyse employee attrition and uncover key factors affecting it using HR data.
2. **Data Collection:**
   Acquired the HR dataset (e.g., Google HR Dataset), which includes employee details like age, gender, job level, satisfaction, and attrition status.
3. **Data Cleaning and Preprocessing (Using Python):**
   - Handled missing values and outliers.
   - Removed unnecessary columns.
   - Transformed and encoded relevant features.
   - Exported the cleaned data as a .csv file for visualization.
4. **Data Visualization and Dashboard Creation (Using Tableau):**
   - Imported the cleaned dataset into Tableau.
   - Created insightful visualizations (e.g., bar charts, pie charts, age bins) to show attrition trends.
   - Applied filters and formatting to enhance readability.
   - Combined multiple sheets into a final interactive dashboard.
5. **Insight Generation:**
   Analysed each chart to derive meaningful insights on attrition by age, gender, satisfaction, and job level.
6. **Reporting and Documentation:**
   Compiled the project into a report with Introduction, Abstract, Tools Used, Steps, and Insights to present the final outcome.

➢ Conclusion

The HR Analytics project successfully identified and visualized the key factors influencing employee attrition using a data-driven approach. Through Python-based preprocessing and Tableau visualizations, we discovered meaningful trends related to age groups, job satisfaction, job level, and gender.

These insights can help HR departments take proactive steps to improve employee engagement, address dissatisfaction early, and implement targeted retention strategies. The final dashboard provides an interactive, at-a-glance overview of attrition patterns that can support effective decision-making in human resource management.