Technocolabs Softwares Inc.

Project of Business Intelligence

Data Analytics Internship

Attrition Analytics Dashboard Report

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I. Introduction :

Employee attrition is a critical issue that organizations face, impacting operational efficiency and overall productivity. Analyzing and understanding the factors influencing attrition can help in developing effective strategies to reduce turnover. This report provides a comprehensive analysis of the Attrition Analytics Dashboard designed using Power BI. It explores key metrics, descriptive and predictive analytics, and offers actionable insights to aid in decision-making.

High employee attrition rates can lead to increased costs associated with recruiting and training new employees, as well as potential losses in productivity and institutional knowledge. Identifying the underlying causes of attrition and addressing them proactively is essential for maintaining a stable and engaged workforce. This report aims to investigate the main factors contributing to employee attrition and provide data-driven recommendations for improving retent

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II. Data Import and Exploration :

1. Loading Data into Power BI :

The dataset was loaded into Power BI using the Power Query Editor, ensuring data types were verified and corrected.

```
= Table.TransformColumnTypes(#"Promoted Headers",{{"Age", Int64.Type}, {"Attrition", type text}, {"BusinessTravel", type text},
```

	Age	Attrition	BusinessTravel	DailyRate	Department	DistanceFromHome	Educati
1	41	Yes	Travel_Rarely	1102	Sales	1	
2	49	No	Travel_Frequently	279	Research & Development	8	
3	37	Yes	Travel_Rarely	1373	Research & Development	2	
4	33	No	Travel_Frequently	1392	Research & Development	3	
5	27	No	Travel_Rarely	591	Research & Development	2	
6	32	No	Travel_Frequently	1005	Research & Development	2	
7	59	No	Travel_Rarely	1324	Research & Development	3	
8	30	No	Travel_Rarely	1358	Research & Development	24	
9	38	No	Travel_Frequently	216	Research & Development	23	
10	36	No	Travel_Rarely	1299	Research & Development	27	
11	35	No	Travel_Rarely	809	Research & Development	16	
12	29	No	Travel_Rarely	153	Research & Development	15	
13	31	No	Travel_Rarely	670	Research & Development	26	
14	34	No	Travel_Rarely	1346	Research & Development	19	
15	28	Yes	Travel_Rarely	103	Research & Development	24	
16	29	No	Travel_Rarely	1389	Research & Development	21	
17	32	No	Travel_Rarely	334	Research & Development	5	
18	22	No	Non-Travel	1123	Research & Development	16	
19	53	No	Travel_Rarely	1219	Sales	2	
20	38	No	Travel_Rarely	371	Research & Development	2	
21	24	No	Non-Travel	673	Research & Development	11	
22	36	Yes	Travel_Rarely	1218	Sales	9	

2. Initial Data Cleaning and Preparation :

Once the data was collected, we prepared it by performing cleaning and transformation steps. This included handling missing values, converting data to the appropriate format, eliminating outliers or inconsistent values, and any other necessary steps to ensure data quality.

III. Descriptive Analytics :

The dataset typically includes several features that provide insights into employee characteristics, job satisfaction, and performance. While the exact features may vary, here's a general list of common features you might find in such a dataset:

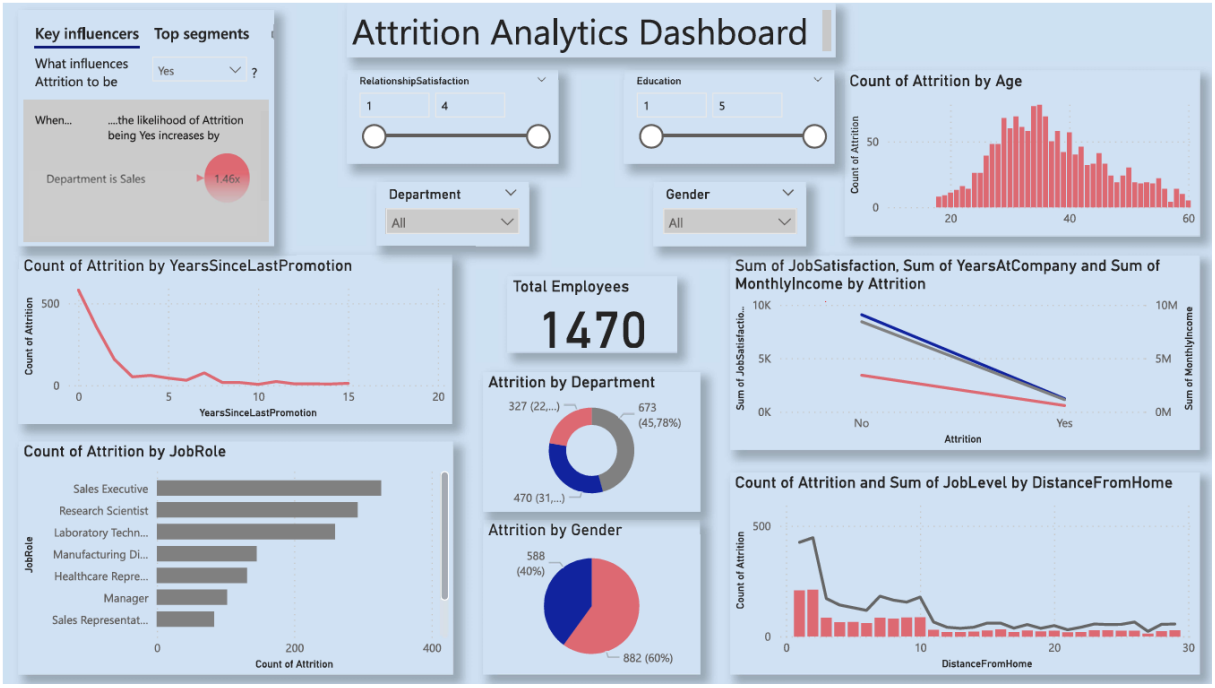
1. **Employee ID:** A unique identifier for each employee.
2. **Age:** The age of the employee.
3. **Attrition:** A binary variable indicating whether the employee has left the company (1) or is still employed (0).
4. **Business Travel:** The frequency and nature of business-related travel (e.g., "Travel_Rarely," "Travel_Frequently," "Non-Travel").
5. **Department:** The department to which the employee belongs (e.g., "Sales," "Research & Development," "Human Resources").
6. **Distance From Home:** The distance of the employee's residence from the workplace.
7. **Education:** The employee's level of education (e.g., "1: 'Below College'," "2: 'College'," "3: 'Bachelor'," "4: 'Master'," "5: 'Doctor').
8. **Education Field:** The field in which the employee's education lies (e.g., "Life Sciences," "Medical," "Marketing").
9. **Environment Satisfaction:** The level of satisfaction with the work environment on a scale.
10. **Gender:** The gender of the employee.
11. **Job Involvement:** The degree to which the employee is involved in their job.

12. **Job Level:** The level or rank of the employee's position.
13. **Job Role:** The specific role or title of the employee's job.
14. **Job Satisfaction:** The level of satisfaction with the job on a scale.
15. **Marital Status:** The marital status of the employee.
16. **Monthly Income:** The monthly salary of the employee.
17. **Num Companies Worked:** The number of companies the employee has worked for.
18. **Over Time:** Whether the employee works overtime or not.
19. **Performance Rating:** The performance rating of the employee.
20. **Relationship Satisfaction:** The level of satisfaction with relationships at the workplace.
21. **Stock Option Level:** The level of stock options provided to the employee.
22. **Total Working Years:** The total number of years the employee has been working.
23. **Training Times Last Year:** The number of training sessions the employee attended last year.
24. **Work-Life Balance:** The balance between work and personal life.
25. **Years At Company:** The number of years the employee has been with the current company.
26. **Years In Current Role:** The number of years the employee has been in their current role.

27. **Years Since Last Promotion:** The number of years since the last time the employee was promoted.

28. **Years With Current Manager:** The number of years the employee has been working under the current manager.

IV. Visualisation :



The Attrition Analytics Dashboard in Power BI is designed to provide a comprehensive analysis of employee attrition within an organization. It leverages various visualizations and interactive features to identify key factors contributing to employee turnover, helping stakeholders understand and address these issues effectively. The dashboard includes metrics such as overall turnover rate, job satisfaction, performance ratings, and provides insights into attrition by department, gender, age, job role, and other critical dimensions. Through descriptive and predictive analytics, the dashboard aids in developing data-driven strategies to improve employee retention.

V. Interpretation :

1. Key Influencers :

Department is Sales: The likelihood of attrition increases by 1.46x if the department is Sales. This indicates a potential issue within the sales department that needs further investigation.

2. Attrition by Age :

The count of attrition is higher in the age group of 30-40 years, indicating mid-career employees are more likely to leave.

3. Attrition by Years Since Last Promotion :

A significant drop in attrition is observed for employees who were promoted within the last 0-5 years, emphasizing the importance of career advancement opportunities.

4. Attrition by Job Role :

Sales Executives and Research Scientists show higher counts of attrition, suggesting these roles might have specific challenges contributing to higher turnover.

5. Attrition by Department and Gender :

The Sales department has the highest attrition rate, followed by Research & Development.

Males have a higher count of attrition compared to females.

6. Job Satisfaction, Years at Company, and Monthly Income :

Employees who are leaving tend to have lower job satisfaction and lower monthly income, suggesting these are critical factors in retention strategies.

7. Distance from Home :

Attrition is higher for employees living closer to the workplace, possibly indicating issues unrelated to commute distance, such as job satisfaction or work environment.

VI. Recommendations :

- **Focus on the Sales Department**: Investigate specific issues within the Sales department and implement targeted retention strategies to address the higher likelihood of attrition.
- **Career Development Programs**: Enhance promotion opportunities and career development programs to retain mid-career employees, reducing the risk of attrition for those with 0-5 years since their last promotion.
- **Improve Job Satisfaction**: Implement measures to improve job satisfaction, particularly for roles such as Sales Executives and Research Scientists, which show higher turnover rates.
- **Salary Review**: Conduct a review of salary structures to ensure competitive compensation, especially for roles with high attrition rates, addressing financial factors contributing to employee turnover.

VII. Conclusion :

The Attrition Analytics Dashboard provides valuable insights into the factors driving employee attrition, allowing for data-driven decision-making. Key findings indicate that the Sales department, mid-career employees, and roles such as Sales Executives and Research Scientists are areas of concern. Improving job satisfaction, offering competitive salaries, and enhancing career development opportunities are essential strategies for reducing attrition.

By leveraging the insights from this dashboard, the organization can implement targeted interventions to improve employee retention, ultimately leading to a more stable and productive workforce.

The utility of Power BI and Power Query lies in their robust capabilities for data analysis and visualization. Power BI enables users to create interactive and dynamic dashboards that provide real-time insights and facilitate informed decision-making. Power Query, as an integral part of Power BI, allows for efficient data preparation and transformation, handling tasks such as cleaning, merging, and reshaping data with ease. Together, these tools enhance the ability to explore complex datasets, uncover patterns, and generate actionable insights, empowering organizations to make strategic decisions based on comprehensive and reliable data analysis.