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HR Analysis Toolkit

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Contents

1.Introduction

Welcome to this comprehensive HR analysis report that focuses on employee attrition in our organization. This report has been created using Power BI, a powerful business intelligence tool that has allowed us to gain valuable insights into our HR data. By analyzing our workforce data, we were able to identify trends, patterns, and correlations that provide us with a deeper understanding of the factors that impact employee retention in our organization.

The main objective of this report is to inform and guide our decision-making process in creating effective strategies to retain our valuable employees and improve our overall organizational performance. In this report, you will find a detailed analysis of our employee turnover rate, the factors that contribute to it, and recommendations to address these challenges.

We hope that this report will be a valuable resource for our organization and help us make data-driven decisions to improve our HR processes and retain our talented workforce. Let's dive into the analysis and explore the findings.

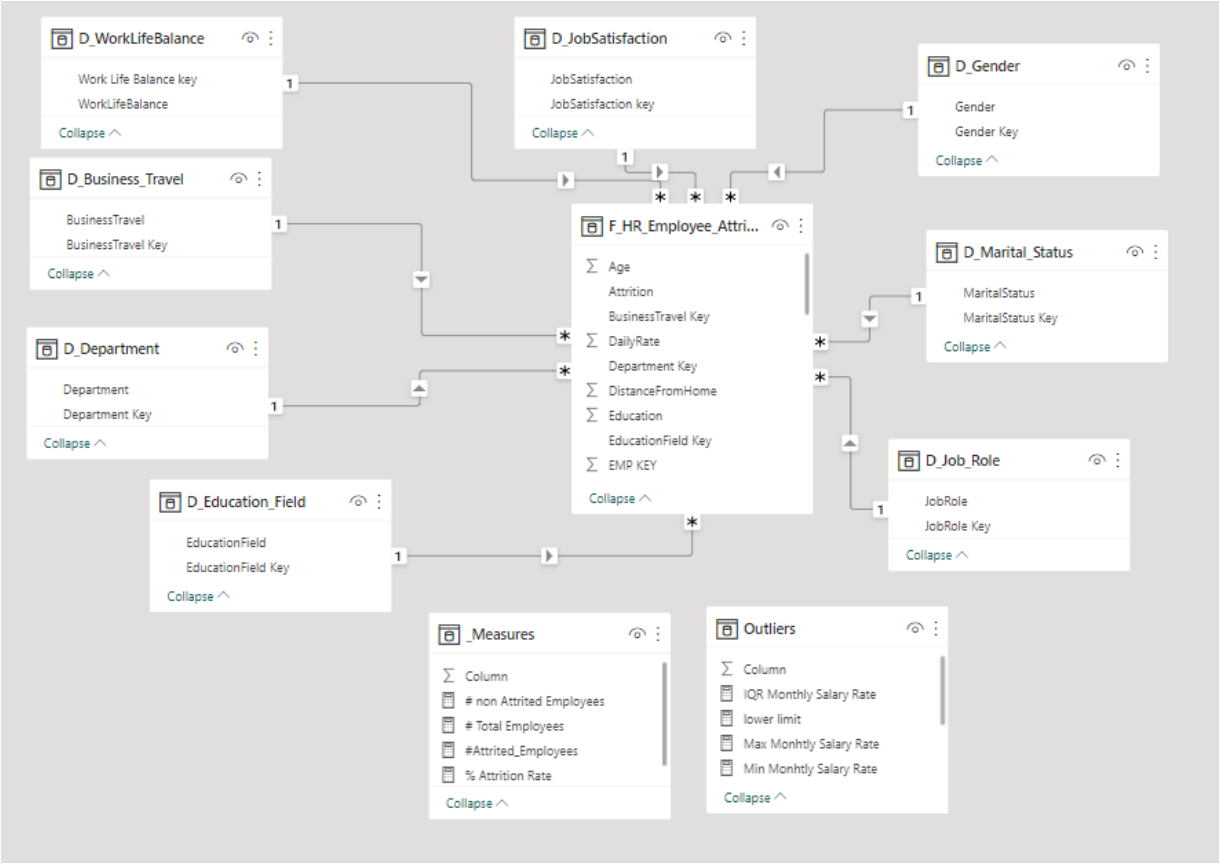
2.Prepare Model in Power BI

In Power BI, I created a data model using the star schema approach to build the HR analysis. By extracting the fact table and dimensions from a flat file source, I created the necessary tables to establish the data model. The fact table, "F_HR_Employee_Attrition," was created along with several dimension tables, including "D_Business_Travel," "D_Department," "D_Education_Field," "D_Gender," "D_Job_Role," "D_JobSatisfaction," "D_Marital_Status," and "D_WorkLifeBalance." With the star schema approach, the data model is optimized for analysis, allowing me to easily join the fact table with the related dimension tables to gain insights into the factors affecting employee attrition. The multi-dimension approach further allows me to slice and dice my analysis by different dimensions and understand the relationship between employee attributes and the factors that contribute to employee attrition.

2.1 Data Preparation

Data preparation is a critical step in any analysis project, and I took several measures to optimize and clean the data for my HR analysis project. Specifically, I removed the standard hours and over 18 columns, as they did not provide meaningful insights for the analysis. Additionally, I made sure to understand the meaning of the numbers in the "D_JobSatisfaction" and "D_WorkLifeBalance" dimensions. For example, I identified that a score of 1 in "D_JobSatisfaction" indicates low job satisfaction, while a score of 4 indicates very high job satisfaction. Similarly, in the "D_WorkLifeBalance" dimension, a score of 1 represents bad work-life balance, while a score of 4 represents the best work-life balance. By cleaning and optimizing the data in this manner, I can be confident that the subsequent analysis will be based on accurate and relevant data.

3. Make the dataset into a star schema



3.1 Identify measures or facts.

In my HR analysis project using Power BI, I utilized a combination of degenerated dimensions and conformed dimensions to build a robust data model. Specifically, I included "JobInvolvement" and "JobLevel" as degenerated dimensions in the fact table "F_HR_Employee_Attrition." These dimensions do not have any associated dimension tables, but they provide meaningful information for the analysis.

In addition, I incorporated several conformed dimensions into the data model. These dimensions, including "D_Business_Travel," "D_Department," "D_Education_Field," "D_Gender," "D_Job_Role," "D_JobSatisfaction," "D_Marital_Status," and "D_WorkLifeBalance," are used across multiple fact tables and are consistent in their meaning and content. By using conformed dimensions, I can ensure that the analysis is reliable and consistent throughout the entire project.

Overall, the combination of degenerated and conformed dimensions, along with the fact table, provides a strong foundation for conducting meaningful HR analysis in Power BI.

4.Usecase

Our HR report comprises of five sheets, each containing different analyses related to employee attrition, overtime, level of education, training, and average salary. We also conducted a persona analysis to gain a deeper understanding of our employees' status.

In the first set of analyses, we looked at the relationship between attrition and other factors such as overtime, level of education, and training. By examining these relationships, we can identify areas where we need to improve to reduce attrition rates.

In the second set of analyses, we created employee personas based on factors such as department, job role, and age group. By understanding the characteristics of our employees, we can tailor our HR policies to better meet their needs.

Finally, we conducted an outlier analysis to identify any anomalies in our data. Specifically, we looked at outliers in the monthly rate of employees and the number of attrited employees based on years since last promotion and years of experience. By identifying these outliers, we can gain insights into potential issues within our organization that need to be addressed.

4.1 Identify outliers

In the last sheet of our report, we identified outliers by using the interquartile range (IQR) method. To apply this method, we calculated the first quartile (Q1) and third quartile (Q3) for each variable of interest. Then, we determined the lower limit (Q1 - 1.5IQR) and upper limit (Q3 + 1.5IQR) for each variable. Any value that fell below the lower limit or above the upper limit was considered an outlier.

We applied this method to identify outliers in two examples, starting with monthly income. By calculating the IQR and using the lower and upper limits, we were able to identify any income values that were unusually low or high. This allowed us to better understand the distribution of income among our employees and identify any potential issues related to compensation.

I am also Using a scatter plot to identify outliers in the number of attrited employees based on years since last promotion and years of experience is a good approach. By plotting the attrition data against the two variables, you can easily spot any points that fall outside the expected range or pattern. These outliers may indicate some interesting insights or anomalies in the data that require further investigation. You can also use various statistical techniques such as regression analysis or clustering to explore the relationship between the variables and the attrition rate in more detail.

Overall, using the IQR method allowed us to easily identify outliers and gain valuable insights into our data.

5 Recommendations & Conclusion

based on my analysis:

The company should pay close attention to the policies related to working overtime as it is an important factor in employee attrition. We found that more than 53% of the employees who left the company worked overtime, compared to only 24% of the employees who stayed with the company. The company should consider the distribution of overtime among all employees and rotate the overtime duties.

Employees in their first year in the company should not be pressured with a lot of overtime as we found that about 30% of the total employees who leave the company due to overtime were in their first year.

Having more data on employees such as surveys taken before and after employment, and after a specific period of employment such as three months (Probation Period) can be useful in identifying other reasons that may not be clear in this data. It should be noted that less than 1500 employees may lead to opposite recommendations.

Males are more likely to leave the company than females as we found that the percentage of male employees who left the company was higher than females. Additionally, the age range of employees from 25 to 40 years had the highest employee attrition rate.

Employees with a stable condition, in terms of emotional well-being and age (neither too young nor too old), are more likely to consider leaving the company. Employees with low relationship satisfaction levels (1 or 2) are also more likely to leave.

We observed that more than 50% of the departed employees who left the company had a salary increase of 11 to 17 percent, while the increase for the remaining employees in the company was the same. This raises the question of whether salaries for sales executives are lower compared to salaries in the labor market or if there are other factors like job difficulty.

The job level is also an important factor as we found that the lower the job level, the higher the attrition rate. Employees with job level 1 were the most attritional employees.

After ten years of an employee remaining in a company, the employee attrition rate is almost non-existent, while in the first year, it is the most dangerous for the company in terms of employee attrition.

Finally, more than 64% of the employees who left the company had a zero level in stock options, and more than 87% had stock option levels 0 and 1.