

Power BI Project

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I. Information About the Data Set

- **Link to Data Set:** <https://www.kaggle.com/datasets/stealthtechnologies/employee-attribution-dataset>
- **Target audience:** This analysis will be presented to the Head of HR Managed Services.
- **Context:** Using partner employee data, identify the characteristics and factors that may influence people's decisions to leave their jobs. Then, conduct further analysis for consultation.
- **Purpose:** Recommend changes to the work environment and company policy to reduce the attrition rate.
- **Describe the Data Set:** The data set comprises 59,598 records of employees from various companies. I divided the data set into 3 tables:

- Lookup Table 1: Employee_infor

Columns Name	Description
Employee ID	A unique number assigned to each employee
Age	The age of the employee, ranging from 18 to 60 years.
Gender	Male/Female
Education Level	The highest education level attained by the employee: (High School, Associate Degree, Bachelor's Degree, Master's Degree, PhD)
Marital Status	The marital status of the employee: (Divorced, Married, Single)
Years at Company	The number of years the employee has been working at the company
Job Role	The department or role the employee works in, encoded into categories such as Finance, Healthcare, Technology, Education, and Media
Job Level	The job level of the employee: (Entry, Mid, Senior)
Company Size	The size of the company the employee works for: (Small,Medium,Large)

- Lookup Table 2: Company_infor

Columns Name	Description
Employee ID	A unique number assigned to each employee
Company Tenure	The total number of years the employee has been working in the industry
Company Reputation	The employee's perception of the company's reputation: (Very Poor, Poor,Good, Excellent)
Company Size	The size of the company the employee works for: (Small,Medium,Large)

- Data Table: Performance

Columns Name	Description
Employee ID	A unique number assigned to each employee
Monthly Income	The monthly salary of the employee, in USD.
Work-Life Balance	The employee's perceived balance between work and personal life, (Poor, Below Average, Good, Excellent)
Job Satisfaction	The employee's satisfaction with their job: (Very Low, Low, Medium, High)
Performance Rating	The employee's performance rating: (Low, Below Average, Average, High)
Number of Promotions	The total number of promotions the employee has received
Overtime	Whether the employee worked overtime: (Yes or No)
Distance from Home	The distance between the employee's home and workplace, in miles
Number of Dependents	The total number of dependents of employee
Remote Work	Whether the employee works remotely: (Yes or No)
Leadership Opportunities	Whether the employee has leadership opportunities: (Yes or No)
Innovation Opportunities	Whether the employee has opportunities for innovation: (Yes or No)
Employee Recognition	The level of recognition the employee receives:(Very Low, Low, Medium, High)
Attrition	Whether the employee has left the company (Stayed or Left).

II. ETL Part

- **Employee_infor table:**
 - Promoted headers and changed the type of the "Employee_ID" column from string to number so I can use it later to establish table relationships.
 - Changed the data type in the following columns to number: "Age," "Gender," "Years at Company"
 - Renamed the column "Job Role" to "Industry" for clearer understanding

Queries [3] ✕ ✓ fx = Table.RenameColumns(#"Changed Type",{{"Job Role",

	123 Employee ID	123 Age	123 Gender	123 Education
1	8410	31	Male	Associ
2	64756	59	Female	Maste
3	30257	24	Female	Bache
4	65791	36	Female	High S
5	65026	56	Male	High S
6	24368	38	Female	Bache
7	64970	47	Male	High S
8	36999	48	Male	Maste
9	32714	57	Male	High S
10	15944	24	Female	PhD
11	29972	30	Female	High S
12	9063	29	Female	Maste
13	21896	47	Female	Associ
14	28098	31	Male	Associ
15	22068	40	Female	High S
16	17696	40	Female	High S
17	55668	19	Female	High S
18	19288	33	Female	High S
19	17034	49	Female	Bache
20	9697	29	Male	Bache
21	17209	51	Female	Maste
22				

9 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED AT 12:28 AM

Query Settings ✕

PROPERTIES

Name
employee_infor

All Properties

APPLIED STEPS

Source ✕

Promoted Headers ✕

Changed Type

Renamed Columns

- **Company_infor table:**

- Promoted headers and changed the column type of "Employee_ID" from string to number so I can use it later to create table relationships.
- Changed the data type of the value in columns "Company Tenure" to number.

Queries [3] ✕ ✓ fx = Table.TransformColumnTypes(#"Promoted Headers",{{"Employee

	123 Employee ID	123 Company Tenure	123 Company Reputation	123 Company Size
1	8410	89	Excellent	Medi
2	64756	21	Fair	Medi
3	30257	74	Poor	Medi
4	65791	50	Good	Small
5	65026	68	Fair	Medi
6	24368	47	Fair	Medi
7	64970	93	Good	Small
8	36999	88	Excellent	Medi
9	32714	75	Fair	Medi
10	15944	45	Good	Large
11	29972	17	Good	Small
12	9063	38	Poor	Medi
13	21896	68	Good	Small
14	28098	84	Good	Small
15	22068	96	Good	Large
16	17696	21	Good	Small
17	55668	63	Fair	Small
18	19288	19	Good	Small
19	17034	70	Good	Medi
20	9697	76	Good	Small
21	17209	72	Good	Small
22				

4 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED ON WEDNESDAY

Query Settings ✕

PROPERTIES

Name
company_infor

All Properties

APPLIED STEPS

Source ✕

Promoted Headers ✕

Changed Type

- **Employee_performance table:**

- Promoted headers and changed the 'Employee_ID' column type from string to number so I can use it later to create table relationships.
- Changed the data type in the following columns to number: "Monthly Income", "Number of Promotions", "Distance from Home", "Number of Dependents"
- Renamed the column "Job Role" to "Industry" to better specify the currency used in the analysis.

Queries [3] ✕ ✓ fx = Table.RenameColumns("#Changed Type",{{"Monthly Income",

	i23 Employee ID	i23 Monthly Income (USD)	A6c Work-Life Balance	A6c Jol
1	8410	5390	Excellent	Me
2	64756	5534	Poor	Hig
3	30257	8159	Good	Hig
4	65791	3989	Good	Hig
5	65026	4821	Fair	Ver
6	24368	9977	Fair	Hig
7	64970	3681	Fair	Hig
8	36999	11223	Excellent	Ver
9	32714	3773	Good	Me
10	15944	7319	Poor	Hig
11	29972	5443	Good	Hig
12	9063	8950	Poor	Me
13	21896	9039	Fair	Ver
14	28098	8090	Fair	Me
15	22068	6350	Good	Hig
16	17696	5176	Poor	Hig
17	55668	8242	Excellent	Me
18	19288	8733	Good	Hig
19	17034	6252	Fair	Hig
20	9697	7538	Fair	Me
21	17209	8733	Good	Hig
22				

Query Settings ✕

PROPERTIES

Name
performance

All Properties

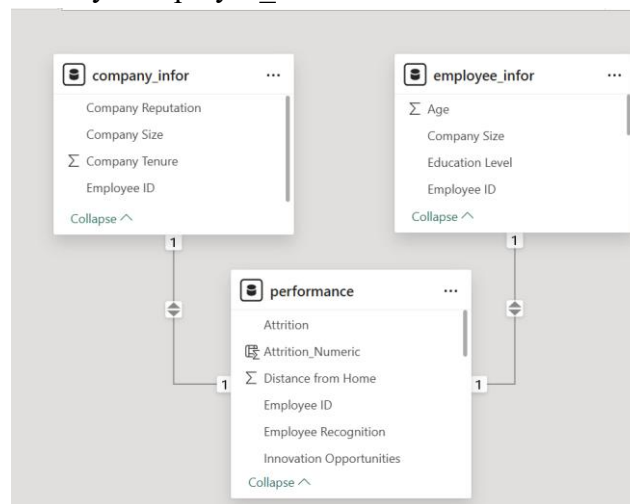
APPLIED STEPS

- Source
- Promoted Headers
- Changed Type
- ✕ Renamed Columns

14 COLUMNS, 999+ ROWS Column profiling based on top 1000 rows PREVIEW DOWNLOADED AT 1:47 AM

III. Table Relationship

Three tables are connected by “Employee_ID”



IV. DAX

1. Measures (6)

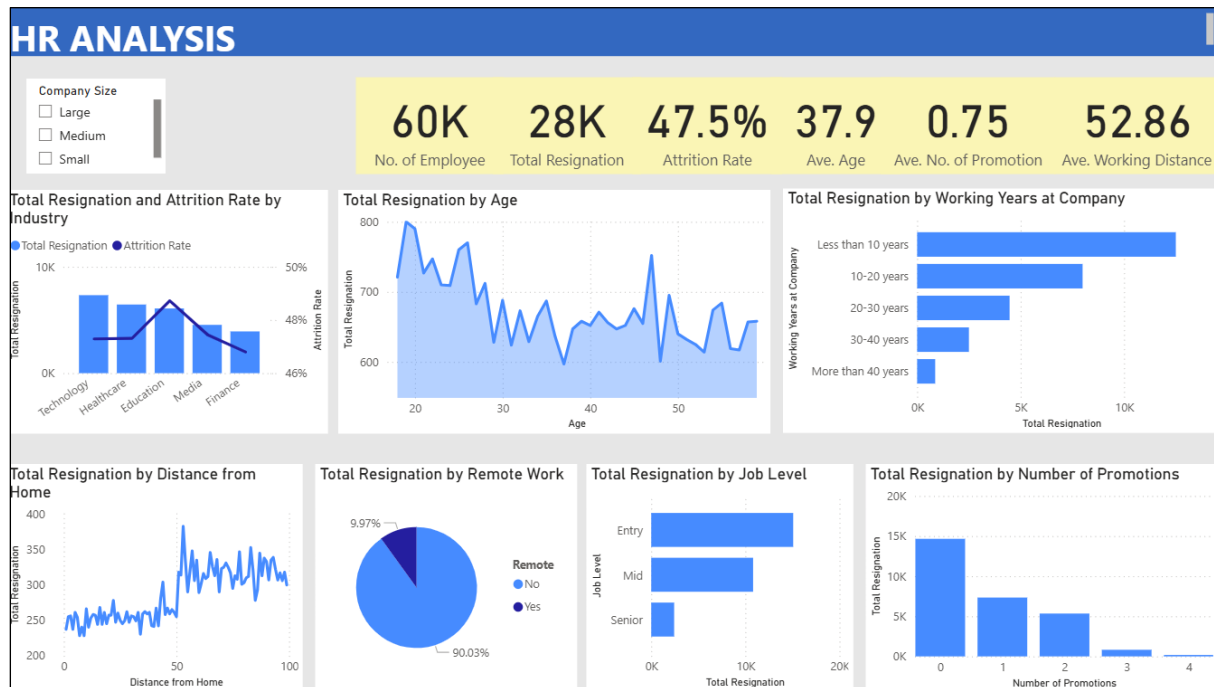
- Ave. Age = AVERAGE(employee_infor[Age])
- Ave. No. of Promotion = AVERAGE(performance[Number of Promotions])
- Ave. Working Distance = AVERAGE(performance[Distance from Home])
- No. of Employee = COUNTROWS(performance)
- Total Resigned = SUM(performance[Attrition_Numeric])
- % of Resigned = [Total Resigned]/[No. of Employee]

2. Calculated Columns (2)

- Attrition_Numeric = if(performance[Attrition]="Stayed",0,1)

- Working Years at Company = SWITCH(TRUE(), employee_infor[Years at Company] <= 10, "Less than 10 years", employee_infor[Years at Company] <= 20, "10-20 years", employee_infor[Years at Company] <= 30, "20-30 years", employee_infor[Years at Company] <= 40, "30-40 years", "More than 40 years")

V. Dashboard



VII. Selected KPI and its justification

- Total Resignation:** The total number of employees who leave their jobs. The segment with the highest number of total resignations will need more detailed analysis. This KPI helps measure the attrition rate.
- Attrition Rate:** Shows the percentage of employees who leave their jobs relative to the total workforce. This KPI assesses the effectiveness of HR department's retention strategies. By tracking this KPI, HR can see the overall rate and specific segment rates, which helps identify departments with the highest turnover. Additionally, this KPI can act as a benchmark for comparing with other companies and market averages.
- Average Age:** The average age of employees who resign. By tracking this KPI, the HR department can better understand which age groups are more likely to leave and make targeted improvements. For instance, if older employees are quitting, HR should focus on enhancing work-life balance or retirement benefits.
- Number of Promotions:** The total promotions that resigned employees received while working at the company. This KPI can help identify whether a lack of promotion contributes to attrition. It also assists in designing fair incentive and promotion policies.

5. **Distance from Home:** The distance between employees' homes and workplaces. This KPI shows how work distance affects employee retention. It assists the HR department in adjusting remote work policies.
6. **Working Years in the Company:** The total number of years former employees worked at the company. This KPI helps HR departments identify when employees might leave and develop strategies to improve job satisfaction over time.

VIII. Observations and Recommendations

1. **Observation 1:** The Technology Industry has the highest number of resignations across all company sizes, including SMEs and large companies. However, the Education Industry has the highest attrition rate among SMEs, and the Healthcare Industry has the highest attrition rate among large companies.
→ **Recommendation:** Since the technology, education, and healthcare industries have high attrition rates, companies in these sectors are more likely to be clients of HR Managed Services. Therefore, the company should reach out to firms within these industries to explore potential clients. Additionally, the company should conduct a more detailed HR analysis across these sectors to better prepare for future consulting opportunities.
2. **Observation 2:** Across all industries and company sizes, the distance from home to workplace seems to be positively linked to the attrition rate. This indicates that the shorter the commuting distance, the lower the likelihood of resignation. Additionally, 90% of employees who resigned don't work remotely at any point.
→ **Recommendation:** For current employees with longer commutes, we should offer more remote work options, such as hybrid arrangements, or provide choices for flexible working hours to boost employee satisfaction. Additionally, in future recruitment efforts, it's helpful to consider hiring candidates within a reasonable distance to reduce turnover risk.
3. **Observation 3:** Over 50% of employees who resigned never received a promotion, and more than 25% of those who resigned received only one promotion. Therefore, it suggests that the higher the opportunity for career growth, the lower the chances of job turnover.
→ **Recommendation:** Utilize data such as employee performance, company budgets, and machine learning to identify who is qualified and in need of a promotion. This approach can motivate employees to stay and lead to greater recognition. Additionally, the HR department should implement training and mentorship programs that support employees in reaching their career goals.
4. **Observation 4:** The longer employees stay with a company, the less likely they are to leave their jobs. The job level with the highest attrition rate is entry-level, usually linked to the age range of 20s to 30s. However, employees in their 45s to 50s also tend to have a high retention rate.

→ **Recommendation:** Develop retention strategies tailored to different age groups, such as offering fast-track career advancement for young and new employees to boost their ambition, providing leadership training for mid-level employees, and implementing work-life balance policies for senior staff.