EMPLOYEE ATTRITION DATASET ANALYSIS

INTRODUCTION

The **Employee Attrition Data Table** is a comprehensive dataset that contains key information about employees, departments, job roles, job satisfaction , business travel, and whether they have left the company (attrition). The table is typically used to analyze the factors that employees staying with or leaving an organization .

Key Columns in the Table:

1. **EmployeeID**: A unique identifier for each employee.
2. **Age**: The age of the employee.
3. **Attrition**: Indicates whether the employee has left the company (Yes/No).
4. **BusinessTravel**: Frequency of business travel (e.g., Rarely, Frequently).
5. **DailyRate**: Daily pay rate of the employee.
6. **Department**: The department in which the employee works (e.g., HR, Sales).
7. **DistanceFromHome**: The distance the employee lives from the workplace
8. **EducationField**: The field of study (e.g., Engineering, Marketing).
9. **EnvironmentSatisfaction**: The employee's satisfaction with their work environment
10. **Gender**: The gender of the employee (Male/Female).
11. **HourlyRate**: The hourly pay rate of the employee.
12. **JobInvolvement**: The employee's involvement in their job
13. **JobLevel**: The level of the job in the organization hierarchy.
14. **JobRole**: The specific role of the employee
15. **JobSatisfaction**: The employee's satisfaction with their job
16. **MaritalStatus**: The marital status of the employee (Single, Married, Divorced).
17. **MonthlyIncome**: The monthly income of the employee.
18. **MonthlyRate**: The monthly pay rate.

AIM

The aim of the report is to analyze and understand the factors contributing to employee attrition within the organization. The insights gained from this analysis will be used to develop targeted strategies to improve employee retention, enhance workforce stability.The report aims to give practical

suggestions that will help the company keep employees happier and more dedicated to their jobs.

OBJECTIVES

Data Collection :

By acquiring a well-structured dataset. This dataset included details such as customerID, attrition, department, jobrole, and more. The data was stored in a relational database.

Data analysis:

Perform statistical and exploratory data analysis on the attrition table to identify factors contributing to employee turnover and to uncover insights.

SQL Queries:

Designed and executed SQL queries to extract relevant information from the database. This involved a range of SQL operations, including SELECT, JOIN, GROUP BY, and aggregation functions.

INSIGHTS

Total Employee Count :

Total count of employee=1676

select count(*)from employee_attrition_new;

Departments Overview :

departments=cardiology,maternity,neurology

select distinct(department)from employee_attirtion_new;

Employee Age Range :

maximum age of an employee=60

minimum age of an employee=18

select * from employee_attirtion_new order by age desc;

select * from employee_attirtion_new order by age;

categorized based on age :

select age,case when age>=18 and age<=29 then 'younger workers' when age>=30 and age<=49 then 'middle_life_employees' else 'older workers' end as age_category from employee_attirtion_new;

>older workers=195

>young workers=385

>middle_life_employees=1095

according to these findings middle life employee is more than younger workers

Employee Gender Distribution count :

number of females=678

number of males=998

number of male workers are more than female

select count(*) from employee_attirtion_new where Gender='female';

select count(*) from employee_attirtion_new where Gender='male';

monthlyincome by gender :

average monthlyincome of female=6702.8746

average monthlyincome of male=6389.9058

female have a higher average salary than males

select gender,avg(monthlyincome) from employee_attirtion_new where Gender='male';

select gender,avg(monthlyincome) from employee_attirtion_new where Gender='female';

Marital status Distribution :

>single=522

>married=777

>divorced=377

according to these analyses married are more than single and divorced

 Employee Distance from Home vs Attrition :

	attrition	avgdistance
	No	8.9059
▶	Yes	11.5678

Employees who live at a greater distance from the office are more likely to quit.

select attrition,avg(distancefromhome)as avgdistance from employee_attirtion_new group by attrition;

Job satisfaction :

Gender	AvgJobSatisfactio
Female	2.6873
Male	2.7735

This query helps to analyze whether there is a difference in job satisfaction levels between male and female employees.

```
SELECT Gender, AVG(JobSatisfaction) AS AvgJobSatisfaction FROM employee_attirtion_new
GROUP BY Gender;
```

Department-wise Environment Satisfaction :

Cardiology=2.6516

maternity=2.7299

neurology=2.7765

environment satisfaction for each department are different.

Connection Between Monthly Income and Job Satisfaction :

jobsatisfactio	avg_income	total
4	6445.3377	530
3	6495.9487	507
2	6482.0129	310
1	6695.3678	329

there's a connection between employees' monthly income and their job satisfaction.This shows how income levels differ by job satisfaction

```
select jobsatisfaction,avg(monthlyincome)as avg_income ,count(*) as total from
employee_attirtion_new  group by jobsatisfaction order by jobsatisfaction desc;
```

Business Travel Impact on Attrition :

businesstravel	total_employee	attrition_cour
Travel_Rarely	1184	126
Travel_Frequently	320	57
Non-Travel	172	16

Frequent travelers have the highest attrition rate and Non-travelers have the lowest attrition rate.

This suggests that frequent business travel may lead to more employees leaving and employees who don't travel for work tend to stay longer. therefore Business travel depend attrition rate.

```
select businesstravel,count(*) as total_employee,sum(attrition="yes") as
```

attrition_count from employee_attirtion_new group by businesstravel;

Attrition by Age Category :

age_category	avg_attrition
middle_life_employees	0.0785
younger workers	0.2623
older workers	0.0615

Comparing attrition rates across different age categories can reveal younger workers groups are more likely to leave the company

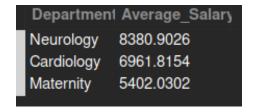select age_category,avg(attrition="yes") as avg_attrition from employee_attirtion_new group by age_category;

Pay Distribution by Job Role :

JobRole	Average_Salary
Admin	17138.6875
Administrative	16647.5565
Therapist	7711.0317
Nurse	5538.5803
Other	5099.0431

The average salary for each job role shows how compensation varies across different positions

SELECT JobRole, AVG(MonthlyIncome) AS Average_Salary FROM employee_attirtion_new GROUP BY JobRole ORDER BY Average_Salary DESC;

Pay Distribution by Department :

Department	Average_Salary
Neurology	8380.9026
Cardiology	6961.8154
Maternity	5402.0302

Salary differences between departments show variations in how employees are paid.

SELECT Department, AVG(MonthlyIncome) AS Average_Salary

FROM employee_attirtion_new GROUP BY Department ORDER BY Average_Salary DESC;

Department vs Environmentsatisfaction :

Department	Average_satisfactio
Neurology	2.7765
Maternity	2.7299
Cardiology	2.6516

The comparison between departments and environment satisfaction shows how satisfied employees are with their work environment in each department.

SELECT Department,AVG(environmentsatisfaction) AS Average_satisfaction

FROM employee_attirtion_new GROUP BY Department ORDER BY   Average_satisfaction DESC;

Conclusion

The analysis shows that age category varying attrition rates, with younger employees and frequent travelers being more likely to leave. Job satisfaction and environment quality also impact retention.enhancing work conditions, providing growth opportunities, Ensuring fair pay, improving work conditions, and creating a supportive work culture and providing well-defined career advancement opportunities can enhance employee loyalty and encourage long-term retention.

Conclusion:

The analysis shows that different departments have varying attrition rates, with younger employees and frequent travelers being more likely to leave. Job satisfaction and environment quality also impact retention. Ensuring fair pay, improving work conditions, and addressing role-specific issues can help reduce turnover and improve overall employee satisfaction.

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