HR ATTRITION ANALYSIS DEMONSTRATION

Employee attrition or turnover is a critical concern for organization worldwide with significant implications for productivity, morale, and bottom-line performance. As a key metric for assessing the effectiveness of human resources strategies, understanding the drivers and trends of attrition Is essential for informing data-driving decisions

STEP 1 :ASK

This HR Attrition analysis report aims to :

- Examine the current state of employee attrition within the organization
- Identifying the key drivers and demographic factors contributing to attrition
- Analyze the impact of attrition on organization performance
- Provide actionable recommendations for reducing attrition and improving employee retention
- A dashboard with visualization and main outcomes

STEP 2: PREPARE

- The dataset is available on kaggle (www.kaggle.com)
- The dataset has 1471 rows
- The data contains 31 columns (*Age,Attrition,Business travel,Daily rate,department,Distance from home,Education,Educational field,Employee count,Gender,Employee number,Environmental satisfaction,Hourly rate,Job involvement,Job level,Job role,Job satisfaction,Marital status,monthly income,monthly rate,Num companies work,Overtime,percent salary hike,Performance rating,Relationship satisfaction,Stock option level,Total working years,Training time last year,Work life balance,Relationship at company,years in current role,years since last promotion,years with current manager*)

STEP 3: PROCESS

We will process and clean our data with the help of Excel as the file is already a CSV file so a look through of our data with Excel can be ideal to:

- Observe our data
- Check for missing data with thehelp of conditional formating
- Remove duplicate rows
- Correctly format columns for easy SQL analysis

Step 4: Analyze

For the analysis part, we will string out the most important components of our data to answer our business objectives. Let's load our data into SQL and check the first 5 rows to make sure it imported well.

```
SELECT top 5 * from HR_Employee_Attrition$
```

	Age	Attrition	BusinessTravel	DailyRate	Department	DistanceFromHome	Education	EducationField	EmployeeCount	EmployeeNumber	EnvironmentSatisfaction	Gender	Hourly
1	41	Yes	Travel_Rarely	1102	Sales	1	2	Life Sciences	1	1	2	Female	94
2	49	No	Travel_Frequently	279	Research & Development	8	1	Life Sciences	1	2	3	Male	61
3	37	Yes	Travel_Rarely	1373	Research & Development	2	2	Other	1	4	4	Male	92
4	33	No	Travel_Frequently	1392	Research & Development	3	4	Life Sciences	1	5	4	Female	56
5	27	No	Travel_Rarely	591	Research & Development	2	1	Medical	1	7	1	Male	40

1. TOTAL EMPLOYEES

```
select count(*) Total_employees from HR_Employee_Attrition$
```

	Total_employees
1	1470

Total employees-1470

Current employees-1233

2. ATTRITION BY DEPARTMENT

```
select department, count(case when attrition='yes' then 1 end) total_attrition ,
            count(case when Attrition='no' then 1 end) current_employee
                        from HR_Employee_Attrition$
                              group by Department
```

	department	total_attrition	current_employee
1	Sales	92	354
2	Research & Development	133	828
3	Human Resources	12	51

Research&development have the highest number of attrition(133) followed by sales(92) then human resources(12)

3. TOTAL ATTRITION AND ATTRITION RATE

```
select count(attrition) total_attrition from HR_Employee_Attrition$
where Attrition='YES'
```

	total_attrition
1	237

Total attrition-237

```
with cte_1 as (select count(attrition) total_attrition from HR_Employee_Attrition$
       where Attrition='yes'),

        cte_2 as (select count(*) as total_employees
                                  from HR_Employee_Attrition$)

                              select round(sum(cast(total_attrition as
decimal(10,2))/cast(total_employees as decimal(10,2)))*100,2) attrition_rate  from
cte_1,cte_2
```

	attrition_rate
1	16.120000000

Attrition rate-16.1%

4. HOW DOES ATTRITION VARIES ACROSS DIFFERENT JOB ROLE

```
select JobRole,count(*) total, count(case when attrition='yes' then 1 end)
total_attrition ,count(case when Attrition='no' then 1 end) current_employee
                              from HR_Employee_Attrition$
                                     group by JobRole
                                            order by total_attrition desc
```

	JobRole	total	total_attrition	current_employee
1	Laboratory Technician	259	62	197
2	Sales Executive	326	57	269
3	Research Scientist	292	47	245
4	Sales Representative	83	33	50
5	Human Resources	52	12	40
6	Manufacturing Director	145	10	135
7	Healthcare Representative	131	9	122
8	Manager	102	5	97
9	Research Director	80	2	78

Laboratory technician have the highest number of attrition(62),followed by sales executive(57) while research director have lowest attrition(2)

5. Business travel

```
select BusinessTravel, count(case when attrition='yes' then 1 end) total_attrition ,
        count(case when Attrition='no' then 1 end) current_employee
                from HR_Employee_Attrition$
                        group by BusinessTravel
                        order by total_attrition desc
```

	BusinessTravel	total_attrition	current_employee
1	Travel_Rarely	156	887
2	Travel_Frequently	69	208
3	Non-Travel	12	138

Employees who travel rarely have the highest number of attrition(156),followed by those who travel frequently(69) then non-travelers(12).

```
select BusinessTravel, avg(JobSatisfaction) Total_employees from HR_Employee_Attrition$
        group by BusinessTravel
                order by Total_employees desc
```

	BusinessTravel	Total_employees
1	Non-Travel	2.79333333333333
2	Travel_Frequently	2.79061371841155
3	Travel_Rarely	2.70278044103547

Average job satisfaction of employee busniess travel is 2.7

6. GENDER

```
select GENDER,count(*) total_gender, count(case when attrition='yes' then 1 end)
total_attrition ,count(case when Attrition='no' then 1 end) current_employee
        from HR_Employee_Attrition$
                group by GENDER
                        order by total_attrition desc
```

	GENDER	total_gender	total_attrition	current_employee
1	Male	882	150	732
2	Female	588	87	501

Females have the highest attrition(150) ,male(87)

7. EMPLOYEE EDUCATION FIELD

```
select EducationField, count(*) Total_employees , count(case when attrition='yes' then
1 end) total_attrition ,count(case when Attrition='no' then 1 end) current_employee
              from HR_Employee_Attrition$
                     group by EducationField
                            order by total_attrition desc
```

	EducationField	Total_employees	total_attrition	current_employee
1	Life Sciences	606	89	517
2	Medical	464	63	401
3	Marketing	159	35	124
4	Technical Degree	132	32	100
5	Other	82	11	71
6	Human Resources	27	7	20

Life sciences have the highest number of attrition(89),followed by Medical(63) while human resources have lowest attrition(7)

8. EMPLOYEMENT ENVIRONMENT SATISFACTION

```
select EnvironmentSatisfaction, count(*) Total_employees, count(case when
attrition='yes' then 1 end) total_attrition ,count(case when Attrition='no' then 1
end) current_employee
       from HR_Employee_Attrition$
              group by EnvironmentSatisfaction
                     order by total_attrition desc
```

	EnvironmentSatisfaction	Total_employees	total_attrition	current_employee
1	1	284	72	212
2	3	453	62	391
3	4	446	60	386
4	2	287	43	244

Very dissatisfied=72 // satisfied=62 // Very Dissatisfied=60 // Dissatisfied=43

9. PERFORMANCE,WORK BALANCE AND SATISFACTION

```
select Attrition, avg(PerformanceRating) avg_performance from HR_Employee_Attrition$
              group by Attrition
                     order by avg_performance desc
```

	Attrition	avg_performance
1	Yes	3.15611814345992
2	No	3.15328467153285

```
select Attrition, avg(WorkLifeBalance) avg_worklifebalance from HR_Employee_Attrition$
		group by Attrition
			order by avg_worklifebalance desc
```

	Attrition	avg_worklifebalance
1	No	2.78102189781022
2	Yes	2.65822784810127

```
select Attrition, avg(JobSatisfaction) avg_jobsatisfaction from HR_Employee_Attrition$
		group by Attrition
			order by avg_jobsatisfaction desc
```

	Attrition	avg_jobsatisfaction
1	No	2.77858880778589
2	Yes	2.46835443037975

10. PERFORMANCE RATING BY DEPARTMENT

```
select Department, avg(PerformanceRating) avg_PerformanceRating
	from HR_Employee_Attrition$
		group by Department
			order by avg_PerformanceRating desc
```

	Department	avg_PerfomanceRating
1	Research & Development	3.16233090530697
2	Human Resources	3.14285714285714
3	Sales	3.13677130044843

11. ATTRITION BY GENDER AND AGE

```
select attrition, count(case when age>= 17 and age<25 then 1 end) as young,
	count(case when age >=25 and age<35 then 1 end) as young_adult,
	count(case when age >= 35 and age< 45 then 1 end) as adult,
	count(case when age >= 45 and age< 55 then 1 end) as middle_aged,
	count(case when age >=55 then 1 end) old
		from HR_Employee_Attrition$
			group by attrition
```

	attrition	young	young_adult	adult	middle_aged	old
1	Yes	38	112	51	25	11
2	No	59	442	454	220	58

Young adults have the highest number of attriton(112)

```
ATTRITION BY GENDER AND AGE
select gender,attrition, count(case when age>= 17 and age<25 then 1 end) as young,
       count(case when age >=25 and age<35 then 1 end) as young_adult,
       count(case when age >= 35 and age< 45 then 1 end) as adult,
       count(case when age >= 45 and age< 55 then 1 end) as middle_aged,
       count(case when age >=55 then 1 end) old
              from HR_Employee_Attrition$
                     group by gender,attrition
```

	gender	attrition	young	young_adult	adult	middle_aged	old
1	Female	Yes	18	43	14	9	3
2	Female	No	19	174	182	104	22
3	Male	No	40	268	272	116	36
4	Male	Yes	20	69	37	16	8

Male young adults have the highest number of attrition(69)

12. What is the avgerage age of employees

```
select avg(age) avg_age from HR_Employee_Attrition$
```

	avg_age
1	36.9238095238095

Average age of employees is 36.9

13. EDUCATIONAL LEVEL

```
       select Education,count(*) Total_employees, count(case when attrition='yes' then
1 end) total_attrition ,
              count(case when Attrition='no' then 1 end) current_employee
                     from HR_Employee_Attrition$
                            group by EducatioN
                            order by total_attrition desc
```

	Education	Total_employees	total_attrition	current_employee
1	3	572	99	473
2	4	398	58	340
3	2	282	44	238
4	1	170	31	139
5	5	48	5	43

Level 3 has the highest number of attrition (99) while level 5 has the lowest(5)

14. AVERAGE TENURE OF EMPLOYEES IN ORGANIZATION

```
select attrition, round(avg(YearsAtCompany),2)
  from HR_Employee_Attrition$
    group by Attrition
```

	attrition	avg_years
1	Yes	5.13
2	No	7.37

The average age of employees who leaves the organization is 7.37 years

15. AVERAGE MONTHLY INCOME BY JOB ROLE AND ATTRITION

```
select JobRole,count(*) total, count(case when attrition='yes' then 1 end)
total_attrition ,count(case when Attrition='no' then 1 end)
current_employee,ROUND(avg(monthlyincome),2) avg_monthlyincome
       from HR_Employee_Attrition$
              group by JobRole
                     order by avg_monthlyincome desc
```

	JobRole	total	total_attrition	current_employee	avg_monthlyincome
1	Manager	102	5	97	17181.68
2	Research Director	80	2	78	16033.55
3	Healthcare Representative	131	9	122	7528.76
4	Manufacturing Director	145	10	135	7295.14
5	Sales Executive	326	57	269	6924.28
6	Human Resources	52	12	40	4235.75
7	Research Scientist	292	47	245	3239.97
8	Laboratory Technician	259	62	197	3237.17

-Managers: Average monthly income of 17181.68 with 5 attritions
-Research director: Average monthly income of 16033.55 with 2 attritions
-Healthcare representative: Average monthly income of 7528.76 with 9 attritions
-manufacturing director: Average monthly income of 7295.14 with 10 attritions
-Sales executive: Average monthly income of 6924.28 with 57 attritions
-Human resources: Average monthly income of 4235.75 with 12 attritions
-Research scientist: Average monthly income of 3239.97 with 47 attritions
-Laboratory technician: Average monthly income of 3237.17 with 62 attritions

16. AVERAGE SALARY PERCENTAGE HIKE

```
select attrition, round(avg(PercentSalaryHike),2) avg_percent_hike
  from HR_Employee_Attrition$
       group by Attrition
```

	attrition	avg_percent_hike
1	Yes	15.1
2	No	15.23

Average percentage salary hike of employees who leaves the organization is 15.1

17. ATTRITION BY TOTAL YEARS AT COMPANY

```
select YearsAtCompany, count(Attrition) total_attrition  from HR_Employee_Attrition$
    where attrition='yes'
           group by YearsAtCompany
                  order by total_attrition desc
```

	YearsAtCompany	total_attrition
1	1	59
2	2	27
3	5	21
4	3	20
5	4	19
6	10	18
7	0	16
8	7	11
9	8	9
10	6	9
11	9	8
12	11	2
13	13	2

Employees who spent less than 5 years in the company have the highest attrition

18. RELATIONSHIP BETWEEN YERAS AT COMPANY WITH JOB SATISFACTION

```
select YearsWithCurrManager, ROUND(avg(jobsatisfaction),2) avg_jobsatisfaction
       from HR_Employee_Attrition$
       where attrition='yes'
              group by YearsWithCurrManager
```

	YearsWithCurrManager	avg_jobsatisfaction
1	0	2.41
2	1	2.91
3	2	2.36
4	3	2.53
5	4	2.18
6	5	3.75
7	6	3
8	7	2.45
9	8	2.9
10	9	2.67
11	10	2
12	11	2
13	14	1

19. ATTRITION WITH CURRENT MANAGER

```
select YearsWithCurrManager ,count(attrition) total_attrition
       from HR_Employee_Attrition$
              where Attrition='yes'
                     group by YearsWithCurrManager
```

	YearsWithCurrManager	total_attrition
1	0	85
2	1	11
3	2	50
4	3	19
5	4	11
6	5	4
7	6	4
8	7	31
9	8	10
10	9	6
11	10	3
12	11	1
13	14	2

Employees who spent less than 3 years with their current manager have the highest number of attrition

20. DISTANCE FROM HOME

```
    select count(case when distancefromhome<=10 then 1 end) as near,
           count(case when distancefromhome >10 and distancefromhome<= 20 then 1 end)as
far,
           count(case when distancefromhome >20 then 1 end) as very_far
                        from HR_Employee_Attrition$
                               where attrition='yes'
```

	near	far	very_far
1	144	48	45

Employees who leaves nearby have the highest attrition(144)

21. YEARS AT CURRENT ROLE

```
select YearsInCurrentRole, count(Attrition) total_attriton
       from HR_Employee_Attrition$
       where attrition='yes'
              group by YearsInCurrentRole
                     order by total_attriton desc
```

	YearsInCurrentRole	total_attriton
1	0	73
2	2	68
3	7	31
4	3	16
5	4	15
6	1	11
7	8	7
8	9	6
9	10	2
10	6	2
11	15	2
12	12	1
13	13	1
14	14	1
15	5	1

The highest attrition occurs between employees who spent less than 5 years in their current role

22. ATTRITION BY OVERTIME

```
select overtime, count(Attrition) total_attrition  from HR_Employee_Attrition$
       where attrition='yes'
              group by OverTime
order by total_attrition desc
```

	overtime	total_attrition
1	Yes	127
2	No	110

Employees who worked overtime have higher attritions(127)

23. MARITAL STATUS

```
select maritalstatus, count(Attrition) total_attrition  from HR_Employee_Attrition$
       where attrition='yes'
              group by maritalstatus
                     order by total_attrition desc
```

	maritalstatus	total_attrition
1	Single	120
2	Married	84
3	Divorced	33

Single people have higher attrition (120)

24. ATTRITION BY JOB LEVEL

```
select Joblevel, count(Attrition) total_attrition  from HR_Employee_Attrition$
       where attrition='yes'
              group by Joblevel
              order by total_attrition desc
```

	Joblevel	total_attrition
1	1	143
2	2	52
3	3	32
4	4	5
5	5	5

Level 1:143
Level 2:52
Level 3:32
Level 4:5
Level 5:5

Level 1 Job role have the highest attrition (143)

25. ATTRITION BY PERFORMANCE RATING

```
select Performancerating, count(Attrition) total_attrition  from
HR_Employee_Attrition$
       where attrition='yes'
              group by Performancerating
                     order by total_attrition desc
```

	Performancerating	total_attrition
1	3	200
2	4	37

Low performance:200 attrition
High performance:37 attrition

26. AVERAGE MONTHLY INCOME

```
select round(avg(monthlyincome),2) avg_monthlyincome from HR_Employee_Attrition$
```

	avg_monthlyincome
1	6502.93

The average monthly income of employees : 6502.93

27. ATTRITION BY JOB INVOLVEMENT

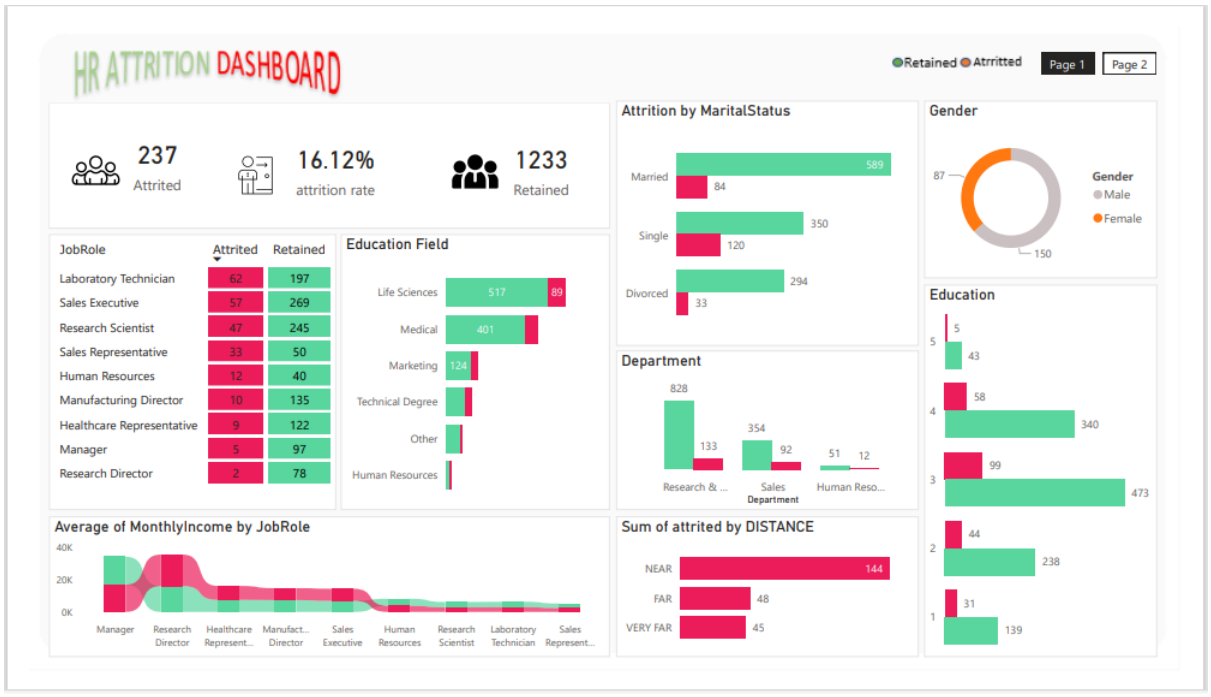
```
select jobinvolvement, count(Attrition) total_attrition  from HR_Employee_Attrition$
       where attrition='yes'
              group by jobinvolvement
                     order by total_attrition desc
```

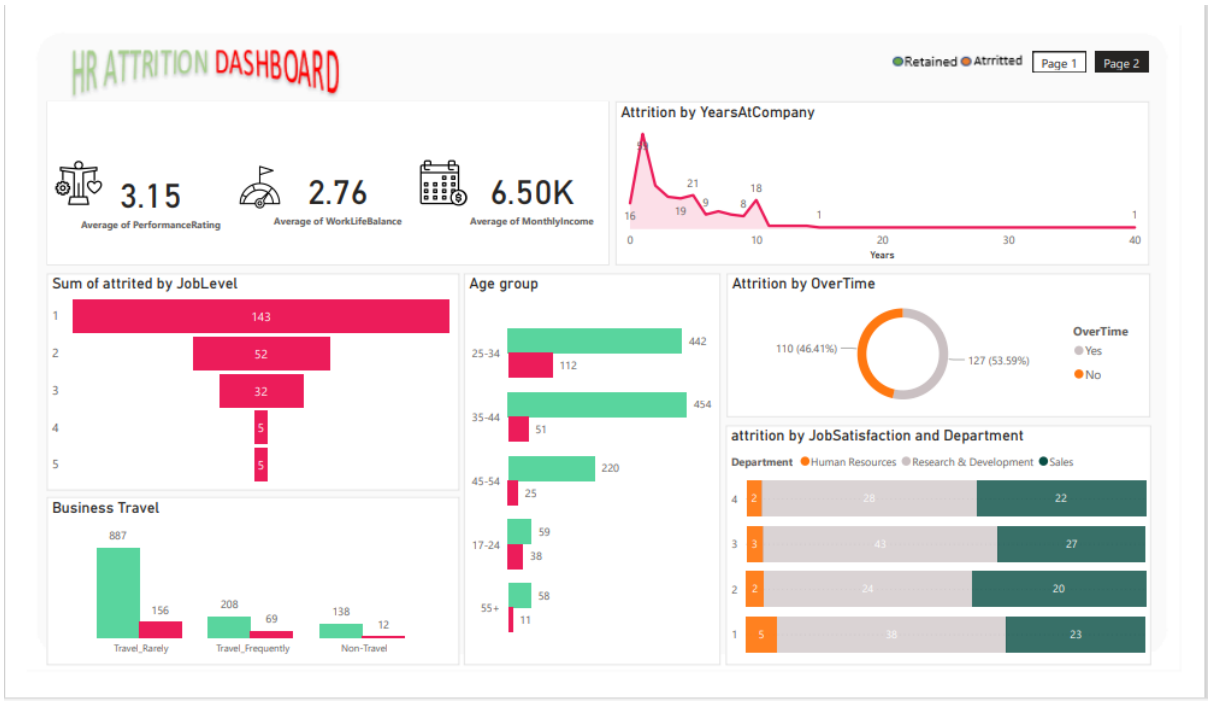
	jobinvolvement	total_attrition
1	3	125
2	2	71
3	1	28
4	4	13

Good: 125
Low: 71
Very low: 28
High: 13

Step 5: share

below is the dashboard that represents the information collected on HR Attrition data which was visualized with power bi





Step 6: Act

The HR Attrition Analysis report provides valuable insights into employee turnover within the organization. Key findings include an overall attrition rate of 16.1%, with notable variations across different demographics, job roles, and tenure.

- HIRE PRODUCTIVELY

A selection process that allows you to hire the right people who can and want to do the job will reduce attrition. This starts with accurate, comprehensive job postings that realistically describe the position.

- CUSTOMER REWARD PROGRAM

Engaged employees are more likely to stay, so recognise and reward their efforts.

- TRAIN MANAGERS TO SUPERVISE EMPLOYEES EFFECTIVELY

How managers handle their employee matters. Equip team leaders with communication, decision making, conflict resolution, and time management skills to cultivate strong relationships with their direct reports.

- Determine the causes of employee job dissatisfaction and take appropriate action.

This could entail resolving concerns related to workload, offering chances for professional development and progression, and guaranteeing sufficient assistance and resources to carry out duties efficiently