

Project Overview

Objective

This project focuses on analyzing HR attrition data to uncover patterns and key drivers contributing to employee turnover. The objective is to build interactive dashboards using Power BI that enable HR decision-makers to proactively monitor workforce trends and reduce attrition risks.

Data Collection

Collected and explored 5 datasets

- employees.csv – Personal and role-related employee data
- departments.csv – Department information
- attendance.csv – Total leaves, working days, and absenteeism
- performance.csv – Yearly performance ratings
- salary_attrition.csv – Salary, attrition status, years at company

Ensured all sources were merged based on EmployeeID for a unified view

The screenshot shows the Power BI Query Editor interface. The main area displays a table with the following data:

	EmployeeID	\$ Salary	Attrition	# YearsAtCompany	JobSatisfaction
1	1	1,03,391.00	No	6	3
2	2	1,47,975.00	Yes	11	3
3	3	87,996.00	No	1	4
4	4	26,283.00	Yes	10	1
5	5	1,05,456.00	No	5	1
6	6	90,783.00	Yes	14	1
7	7	1,21,382.00	No	22	3
8	8	97,178.00	No	2	4
9	9	88,533.00	No	8	4
10	10	42,365.00	No	24	3
11	11	1,27,657.00	No	3	4
12	12	1,37,255.00	Yes	2	2
13	13	42,949.00	No	32	3
14	14	1,41,829.00	No	10	1
15	15	58,509.00	No	2	4
16	16	1,01,387.00	No	1	2
17	17	1,04,342.00	No	11	3
18	18	39,928.00	No	8	3
19	19	41,832.00	No	7	1
20	20	32,534.00	No	4	1
21	21	26,835.00	No	13	3
22	22	95,251.00	No	12	2
23	23	58,381.00	No	12	1
24	24	1,49,313.00	No	8	3

The 'Applied Steps' pane on the right shows the following steps:

- Source
- Promoted Headers
- Changed Type
- Changed Type1
- Renamed Columns

Data Cleaning

Performed initial cleaning in Power Query Editor:

- Standardized text formats (capitalization, trimming spaces)
- Ensured consistency in date formats and numerical fields
- Used Power Query in Power BI to promote the first row to headers, ensuring proper field names were applied for modeling and analysis.

Prepared by: [M. Suresh Reddy]

Date : July 2025

Tools Used: Power BI, Excel, DAX, Power Query

Data Modeling

Data Modeling

Created relationships in the Model View:

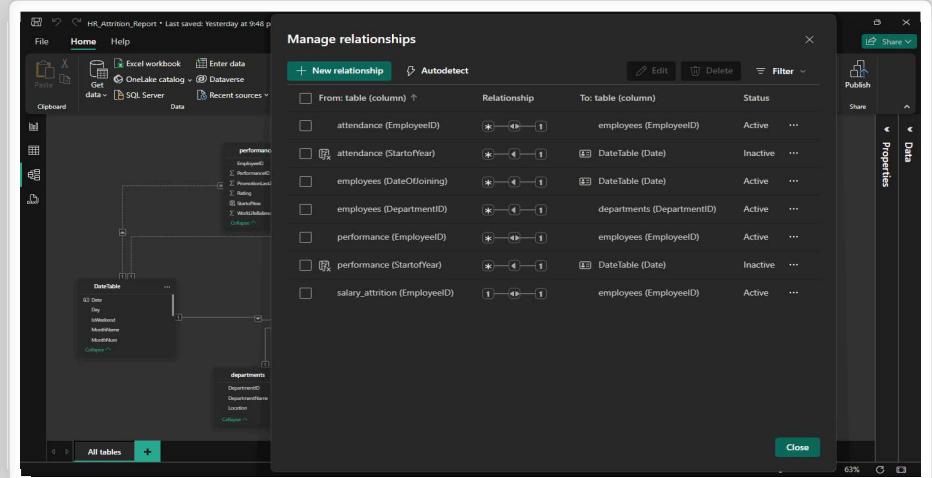
- Established relationships using EmployeeID, DepartmentID, and date fields.
- Added a **Date Table** using DAX to enable time intelligence functions (YTD, MTD).
- Set up a star schema model to optimize performance and visual analysis.

Set primary keys:

- EmployeeID in all tables as key
- DepartmentID for employees and departments.

Relationships:

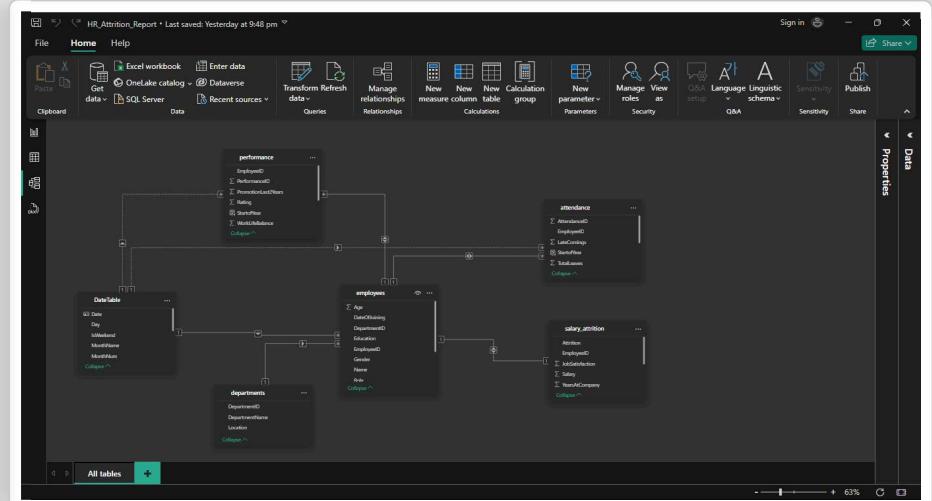
- employees[EmployeeID] → attendance[EmployeeID],
- employees[EmployeeID] → performance[EmployeeID],
- employees[EmployeeID] → salary_attrition[EmployeeID]
- employees[DepartmentID] → departments[DepartmentID]



Dashboard Development

Created an interactive 3-page dashboard focusing on:

- Talent Distribution & Demographics.
- Performance, Promotion & Engagement.
- Attendance, Salary & Attrition.



DAX Calculations

DAX Measures for KPIs

- Total Employees: COUNT(attendance[EmployeeID])
- Female Employees = CALCULATE(COUNT(employees[EmployeeID]), employees[Gender] = "Female")
- Male Employees = CALCULATE(COUNT(employees[EmployeeID]), employees[Gender] = "Male")
- Avg Employee Age = AVERAGE(employees[Age])
- Avg Performance Rating = AVERAGE(performance[Rating])
- Promotion Rate = DIVIDE(SUM(performance[PromotionLast2Years]), COUNT(performance[EmployeeID]))
- Avg Job Satisfaction = AVERAGE(salary_attrition[JobSatisfaction])
- Avg Work Life Balance = AVERAGE(performance[WorkLifeBalance])
- Total Salary = sum(salary_attrition[Salary])
- Avg Salary = AVERAGE(salary_attrition[Salary])
- Attrition rate = DIVIDE(CALCULATE(COUNTROWS(salary_attrition), salary_attrition[Attrition] = "Yes"), COUNTROWS(salary_attrition))
- Avg Leaves = AVERAGE(attendance[TotalLeaves])
- Avg Late Comings = AVERAGE(attendance[LateComings])

Data Table using DAX

```
• DateTable =
ADDCOLUMNS(CALENDAR(DATE(2018,01,01),DATE(2025,12,31)), "Year", YEAR([Date]),
"Quarter", QUARTER([Date]), "MonthNum", MONTH([Date]), "MonthName", FORMAT([Date],
"MMMM"), "YearMonth", FORMAT([Date], "YYYY-
MM"), "Weekday", WEEKDAY([Date]), "WeekdayName", FORMAT([Date], "dddd"), "IsWeekend",
IF(WEEKDAY([Date],2)>5,True,False),"Day",DAY([Date]),"WeekofYear",WEEKNUM([Date]))
```

The screenshot shows the Power BI Data View interface. The top navigation bar includes File, Home, Help, and Table tools. The main area displays a table titled 'DateTable' with 2,922 rows. The columns are: Date, Year, Quarter, MonthNum, MonthName, YearMonth, Weekday, WeekdayName, IsWeekend, Day, WeekofYear. The data starts from 01-01-2018 and continues through 2025. The right side of the screen shows the Data pane with various tables listed: attendance, DateTable, Date, employees, MonthNum, MonthName, Quarter, Weekday, WeekdayName, WeekofYear, Year, and YearMonth. Relationships are also visible between the DateTable and other tables like attendance and employees.

Date	Year	Quarter	MonthNum	MonthName	YearMonth	Weekday	WeekdayName	IsWeekend	Day	WeekofYear
01-01-2018	2018	1	1	January	2018-01	2	Monday	False	1	1
02-01-2018	2018	1	2	January	2018-01	3	Tuesday	False	2	2
03-01-2018	2018	1	3	January	2018-01	4	Wednesday	False	3	3
04-01-2018	2018	1	4	January	2018-01	5	Thursday	False	4	4
05-01-2018	2018	1	5	January	2018-01	6	Friday	False	5	5
06-01-2018	2018	1	6	January	2018-01	7	Saturday	True	6	32
07-01-2018	2018	1	7	January	2018-01	8	Sunday	True	7	33
08-01-2018	2018	1	8	January	2018-01	9	Monday	False	8	34
09-01-2018	2018	1	9	January	2018-01	10	Tuesday	False	9	35
10-01-2018	2018	1	10	January	2018-01	11	Wednesday	False	10	36
11-01-2018	2018	1	11	January	2018-01	12	Thursday	False	11	37
12-01-2018	2018	1	12	January	2018-01	13	Friday	False	12	38
13-01-2018	2018	1	13	January	2018-01	14	Saturday	True	13	39
14-01-2018	2018	1	14	January	2018-01	15	Sunday	True	14	40
15-01-2018	2018	1	15	January	2018-01	16	Monday	False	15	41
16-01-2018	2018	1	16	January	2018-01	17	Tuesday	False	16	42
17-01-2018	2018	1	17	January	2018-01	18	Wednesday	False	17	43
18-01-2018	2018	1	18	January	2018-01	19	Thursday	False	18	44
19-01-2018	2018	1	19	January	2018-01	20	Friday	False	19	45
20-01-2018	2018	1	20	January	2018-01	21	Saturday	True	20	46
21-01-2018	2018	1	21	January	2018-01	22	Sunday	True	21	47
22-01-2018	2018	1	22	January	2018-01	23	Monday	False	22	48
23-01-2018	2018	1	23	January	2018-01	24	Tuesday	False	23	49
24-01-2018	2018	1	24	January	2018-01	25	Wednesday	False	24	50
25-01-2018	2018	1	25	January	2018-01	26	Thursday	False	25	51
26-01-2018	2018	1	26	January	2018-01	27	Friday	False	26	52
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28-01-2018	2018	1	28	January	2018-01	29	Sunday	True	28	54
29-01-2018	2018	1	29	January	2018-01	30	Monday	False	29	55
30-01-2018	2018	1	30	January	2018-01	31	Tuesday	False	30	56
01-02-2018	2018	2	1	February	2018-02	1	Wednesday	False	1	1
02-02-2018	2018	2	2	February	2018-02	2	Thursday	False	2	2
03-02-2018	2018	2	3	February	2018-02	3	Friday	False	3	3
04-02-2018	2018	2	4	February	2018-02	4	Saturday	True	4	4
05-02-2018	2018	2	5	February	2018-02	5	Sunday	True	5	5
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14-02-2018	2018	2	14	February	2018-02	14	Tuesday	False	14	40
15-02-2018	2018	2	15	February	2018-02	15	Wednesday	False	15	41
16-02-2018	2018	2	16	February	2018-02	16	Thursday	False	16	42
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19-02-2018	2018	2	19	February	2018-02	19	Sunday	True	19	45
20-02-2018	2018	2	20	February	2018-02	20	Monday	False	20	46
21-02-2018	2018	2	21	February	2018-02	21	Tuesday	False	21	47
22-02-2018	2018	2	22	February	2018-02	22	Wednesday	False	22	48
23-02-2018	2018	2	23	February	2018-02	23	Thursday	False	23	49
24-02-2018	2018	2	24	February	2018-02	24	Friday	False	24	50
25-02-2018	2018	2	25	February	2018-02	25	Saturday	True	25	51
26-02-2018	2018	2	26	February	2018-02	26	Sunday	True	26	52
27-02-2018	2018	2	27	February	2018-02	27	Monday	False	27	53
28-02-2018	2018	2	28	February	2018-02	28	Tuesday	False	28	54
29-02-2018	2018	2	29	February	2018-02	29	Wednesday	False	29	55
01-03-2018	2018	3	1	March	2018-03	1	Thursday	False	1	1
02-03-2018	2018	3	2	March	2018-03	2	Friday	False	2	2
03-03-2018	2018	3	3	March	2018-03	3	Saturday	True	3	3
04-03-2018	2018	3	4	March	2018-03	4	Sunday	True	4	4
05-03-2018	2018	3	5	March	2018-03	5	Monday	False	5	32
06-03-2018	2018	3	6	March	2018-03	6	Tuesday	False	6	33
07-03-2018	2018	3	7	March	2018-03	7	Wednesday	False	7	34
08-03-2018	2018	3	8	March	2018-03	8	Thursday	False	8	35
09-03-2018	2018	3	9	March	2018-03	9	Friday	False	9	36
10-03-2018	2018	3	10	March	2018-03	10	Saturday	True	10	37
11-03-2018	2018	3	11	March	2018-03	11	Sunday	True	11	38
12-03-2018	2018	3	12	March	2018-03	12	Monday	False	12	39
13-03-2018	2018	3	13	March	2018-03	13	Tuesday	False	13	40
14-03-2018	2018	3	14	March	2018-03	14	Wednesday	False	14	41
15-03-2018	2018	3	15	March	2018-03	15	Thursday	False	15	42
16-03-2018	2018	3	16	March	2018-03	16	Friday	False	16	43
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22-03-2018	2018	3	22	March	2018-03	22	Thursday	False	22	49
23-03-2018	2018	3	23	March	2018-03	23	Friday	False	23	50
24-03-2018	2018	3	24	March	2018-03	24	Saturday	True	24	51
25-03-2018	2018	3	25	March	2018-03	25	Sunday	True	25	52
26-03-2018	2018	3	26	March	2018-03	26	Monday	False	26	53
27-03-2018	2018	3	27	March	2018-03	27	Tuesday	False	27	54
28-03-2018	2018	3	28	March	2018-03	28	Wednesday	False	28	55
29-03-2018	2018	3	29	March	2018-03	29	Thursday	False	29	56
30-03-2018	2018	3	30	March	2018-03	30	Friday	False	30	57
31-03-2018	2018	3	31	March	2018-03	31	Saturday	True	31	58
01-04-2018	2018	4	1	April	2018-04	1	Sunday	True	1	1
02-04-2018	2018	4	2	April	2018-04	2	Monday	False	2	2
03-04-2018	2018	4	3	April	2018-04	3	Tuesday	False	3	3
04-04-2018	2018	4	4	April	2018-04	4	Wednesday	False	4	4
05-04-2018	2018	4	5	April	2018-04	5	Thursday	False	5	5
06-04-2018	2018	4	6	April	2018-04	6	Friday	False	6	32
07-04-2018	2018	4	7	April	2018-04	7	Saturday	True	7	33
08-04-2018	2018	4	8	April	2018-04	8	Sunday	True	8	34
09-04-2018	2018	4	9	April	2018-04	9	Monday	False	9	35
10-04-2018	2018	4	10	April	2018-04	10	Tuesday	False	10	36
11-04-2018	2018	4	11	April	2018-04	11	Wednesday	False	11	37
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13-04-2018	2018	4	13	April	2018-04	13	Friday	False	13	39
14-04-2018	2018	4	14	April	2018-04	14	Saturday	True	14	40
15-04-2018	2018	4	15	April	2018-04	15	Sunday	True	15	41
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17-04-2018	2018	4	17	April	2018-04	17	Tuesday	False	17	43
18-04-2018	2018	4	18	April	2018-04	18	Wednesday	False	18	44
19-04-2018	2018	4	19	April	2018-04	19	Thursday	False	19	45
20-04-2018	2018	4	20	April	2018-04	20	Friday	False	20	46
21-04-2018	2018	4	21	April	2018-04	21	Saturday	True	21	47
22-04-2018	2018	4	22	April	2018-04	22	Sunday	True	22	48
23-04-2018	2018									

HR OVERVIEW: Talent Distribution & Demographics

Understand the diversity, location, gender, age & education makeup of your workforce

Location

Select all

Bangalore

Berlin

London

New York

Male Employees

328

Total Employees

1000

Female Employees

360

Average Employee Age

40.15

Filter by Education Level

Select all

Bachelo...

Masters

PhD

Select Gender

All

Department

Select all

Admin

Engineering

Finance

HR

IT

Legal

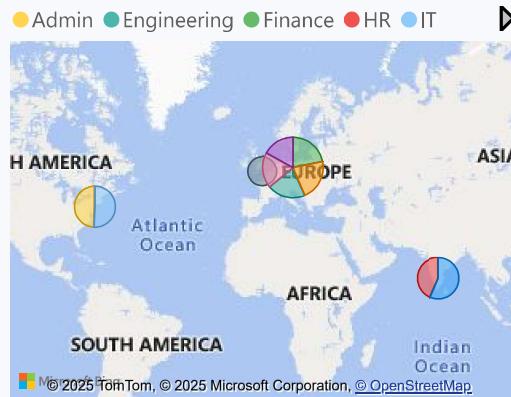
Marketing

Operations

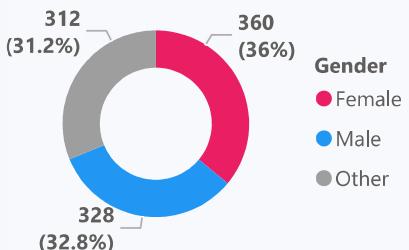
Sales

Support

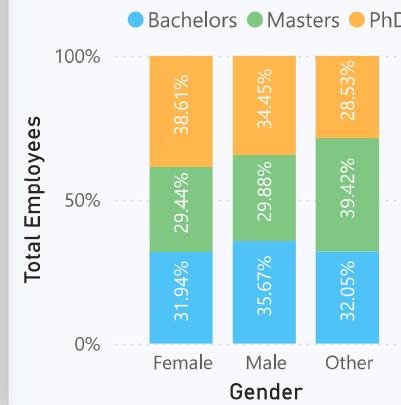
Geographic Spread of Departments



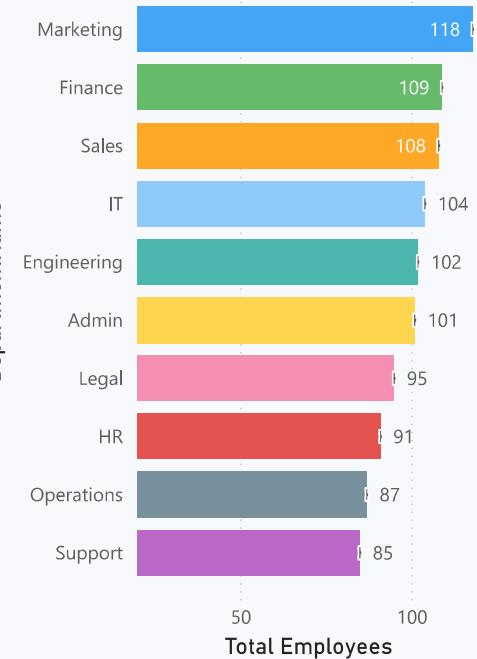
Gender Distribution Across the Workforce



Educational Background by Gender



Headcount by Department



EMPLOYEE EXPERIENCE: Growth, Satisfaction & Recognition

Visualize how employees are performing, growing, and feeling at the organization

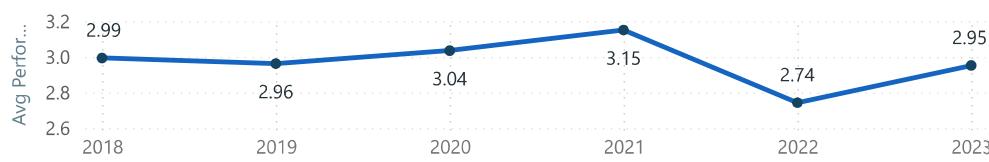
Role

Select all	Accountant	Business An...	Data Scientist	DevOps Eng...
HR Manager	Legal Advisor	Marketing S...	Network Ad...	Product Ma...
Recruiter	Sales Execut...	Software En...	Support Sp...	UI/UX Desig...

Gender

- Select all
- Female
- Male
- Other

Performance Trends Over Time



Department-wise Performance Summary

DepartmentName	Avg Performance Rating
Operations	3.14
HR	3.12
Sales	3.03
Legal	2.99
Marketing	2.97
Support	2.96
Engineering	2.94
Admin	2.89
Finance	2.89
IT	2.82
Total	2.97

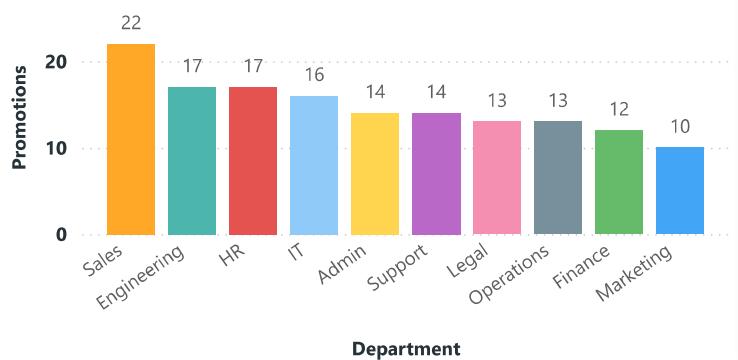
Avg Performance Rating

2.97

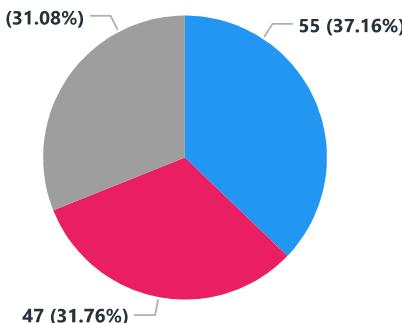
Promotion Rate

14.80%

Promotions Across Departments



Department-wise Performance Summary



- Gender
- Male
 - Female
 - Other

Satisfaction Index

2.49

Work-Life Balance

2.50

WORKPLACE WELL-BEING: Absenteeism, Pay & Turnover Insights

Track absenteeism trends, compensation patterns, and attrition risks

Attrition

- No
- Yes

Gender

- Female
- Male
- Other

Average Late Arrivals

4.57

Average Monthly Salary

₹ 88.24K

Avg Leaves

14.41

Overall Employee Attrition Rate

20.50%

Education

Select all

Bachelo...

Masters

PhD

Year

2018

2025

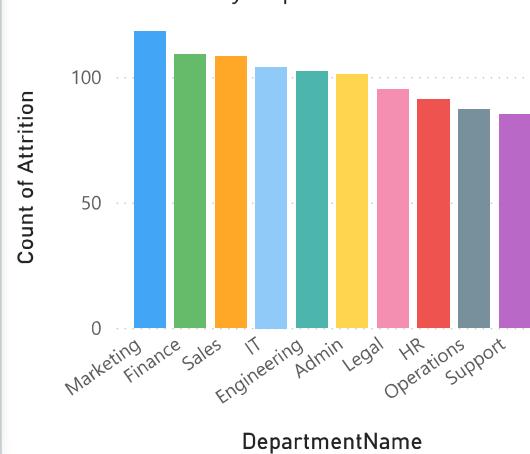
Average of Total Leaves by Year



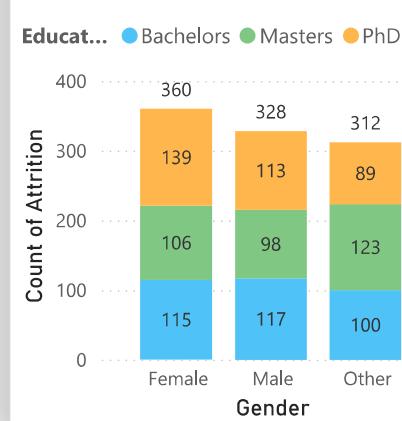
Department

- Admin
- Engineering
- Finance
- HR
- IT
- Legal
- Marketing
- Operations
- Sales
- Support

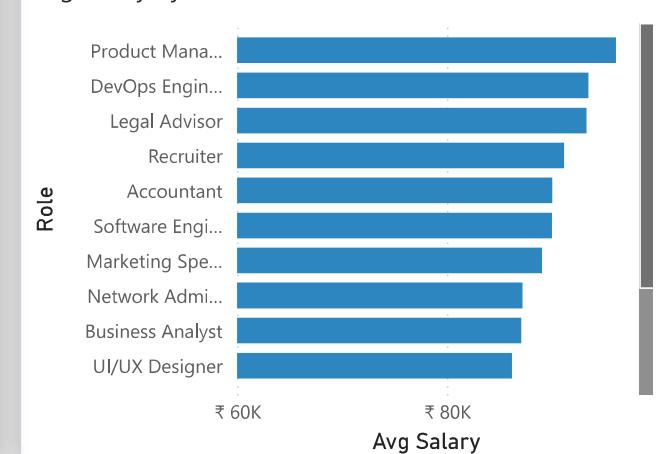
Count of Attrition by Department



Count of Attrition by Gender and Education



Avg Salary by Role



Dashboard Summaries

◆ Talent Distribution & Demographics

Key KPIs & Visuals:

- Total Employees: 1000
- Male: 328, Female: 360
- Average Employee Age: 40.15
- Location Filter: Bangalore, Berlin, London, New York
- Education Filter: Bachelor's, Master's, PhD
- Departments: IT, Finance, Sales, HR, Support, etc.

Insights:

- Balanced gender ratio with a slight female lead.
- Highest headcount is in Marketing, followed by Finance and Sales.
- Educational background is mostly Bachelor's, across both genders.
- Geographic map shows diverse spread across continents.
- Department spread shows Operations and Support with lower headcount — a potential capacity gap.

◆ Performance, Promotion & Engagement

Key KPIs & Visuals:

- Avg. Performance Rating: 2.97
- Satisfaction Index: 2.49
- Work-Life Balance Score: 2.50
- Promotion Rate: 14.80%
- Trends in Performance Rating (2018–2023)
- Department-wise performance: Operations (3.14) highest, IT (2.82) lowest.

Insights:

- Moderate performance average (< 3), with room for improvement in engagement and motivation.
- Promotion activity is relatively healthy (14.8%), but more targeted career advancement paths can boost retention.
- Satisfaction and work-life balance scores below 3 suggest employee disengagement or stress.
- Engineering received the most promotions, while Marketing received the least, despite high headcount — this mismatch may affect morale.

◆ Attendance, Salary & Attrition

Key KPIs & Visuals:

- Overall Attrition Rate: 20.50%
- Avg. Monthly Salary: ₹88.24K
- Avg. Late Arrivals: 4.57
- Avg. Leaves Taken: 14.41
- Total Leaves (Yearly Trend): Peak in 2021
- Attrition Breakdown by:

Department
Gender & Education
Salary by Role

Insights:

- High attrition rate (20.5%) is a major concern, above ideal industry benchmarks.
- Employees with Bachelor's degrees have the highest attrition count.
- Marketing and Engineering show the most attrition by department — consistent with earlier performance and promotion gaps.
- Late arrivals and leaves are moderately high, potentially impacting productivity.
- Product Managers and DevOps Engineers have the highest salaries — could signal retention strategies for top talent.

Recommendations & Conclusion

✓ Recommendations:

Diversity Management:

- Maintain the gender balance by reinforcing inclusive hiring and career growth opportunities.
- Analyze department-wise gender distribution to address imbalances (e.g., underrepresentation in IT or Engineering).

Location-Based Strategy:

- Evaluate city-specific attrition or performance trends (e.g., Bangalore vs. Berlin).
- Align benefits and compensation based on cost of living and regional expectations.

Educational Upskilling:

- Offer learning and development programs (certifications, degrees) to employees with only Bachelor's degrees.
- Use education insights to build tailored training plans for each department.

Departmental Resource Allocation:

- Departments like Operations and Support have lower headcount — consider resource reallocation or hiring to balance workloads.

✓ Recommendations:

Performance Improvement Programs:

- Implement coaching and mentorship in departments with low ratings (e.g., IT, Finance).
- Consider revising performance review processes for fairness and clarity.

Career Progression Planning:

- Improve transparency in promotion criteria, especially for Marketing and Support, which have low promotion counts.
- Use career paths to retain high-performing talent.

Boost Employee Satisfaction:

- Conduct regular pulse surveys to dive deeper into why satisfaction is low (2.49).
- Improve non-monetary perks: recognition programs, flexible schedules, health and wellness.

Work-Life Balance Interventions:

- Introduce hybrid work, mental health days, or burnout-prevention policies.
- Train managers to recognize and mitigate work-life stressors.

✓ Recommendations:

Attrition Reduction Strategy:

- Target high-attrition departments (e.g., Marketing, Engineering) with retention interviews and stay bonuses.
- Focus on early-tenure employees and those with Bachelor's degrees, as they show the highest turnover.

Compensation Benchmarking:

- Regularly compare salary levels with industry standards.
- Create a tiered incentive structure for high-risk roles (e.g., Business Analyst, Legal Advisor).

Attendance & Productivity Monitoring:

- Departments with higher late arrivals or leave averages may benefit from flexible work hours or time management training.
- Address underlying reasons (e.g., workload stress, health) for frequent leaves.

High-Performer Retention:

- Invest in roles with high salary and impact (e.g., DevOps, Product Managers).
- Provide leadership opportunities or challenging projects to keep top earners engaged.

📌 Conclusion:

The HR Dashboard highlights crucial insights into the organization's workforce stability. **Attrition is heavily concentrated in early-career employees, low-income groups, and specific departments/roles.** By proactively implementing role-specific retention strategies, improving employee compensation and engagement, and creating a supportive work culture, the company can significantly reduce turnover and improve long-term talent retention.