

INTRODUCTION

Adviti Pvt. Ltd., a leading consulting firm known for its data-driven approach to decision-making, initiated an HR Analytics project to delve into its workforce data. The objective is to uncover actionable insights that can enhance employee engagement, optimize operational practices, and inform strategic decisions. This project aims to simulate real-world business analytics tasks, providing a platform for the practical application of data analysis in a corporate setting.

OBJECTIVE

The primary goal of this HR Analytics project is twofold:

- a. Identify Factors Influencing Employee Attrition:
 - ❖ To pinpoint the underlying causes of employee turnover and propose data-backed strategies to bolster retention.
- b. Optimize Employee Training Programs:
 - ❖ To evaluate the current training initiatives effectiveness and suggest improvements for fostering skill development and enhancing

DATA CLEANING AND PREPARATION

1. Data Cleanup:

- Rows with empty salary values are updated to NULL.
- The "Salary" column data type is modified to INT.

2. Data Transformation:

- **AgeGroup:** Created a new column **AgeGroup** based on the **Age** column.
- **Gender:** Replaced 'M' and 'Maleale' with 'Male' and 'F' and 'Femaleemale' with 'Female'.
- **Position:** Replaced 'Account Exec.', 'AccountExec.', 'AccountExecutive' with 'Account Executive' and 'DataAnalyst' with 'Data Analyst' and 'CEO' with 'Chief Executive Officer' and 'COO' with 'Chief Operating Officer' and 'CTO' with 'Chief Technology Officer'
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3. Derived Columns:

- Calculated the AvgWorkHours column for average work hours per week.

- **SalaryGroup:** Created a new column **SalaryGroup** based on the **Salary** column. Employees were categorized into salary ranges (e.g., '90-100lakh').
- **Training hour group:** Created a new column **Training_hoursGroup** based on the **Training_hours** column. Employees were categorized into training_hours (e.g., '5-10')
- **AbsenteeismGroup:** Created a new column **AbsenteeismGroup** based on the **Absenteeism** column. Employees were categorized into **Absenteeism** (e.g., '0-5')
- **distance_from_workGroup:** Created a new column **distance_from_workGroup** based on the **distance_from_work** column. Employees were categorized into **distance_from_work** (e.g., '5-15')

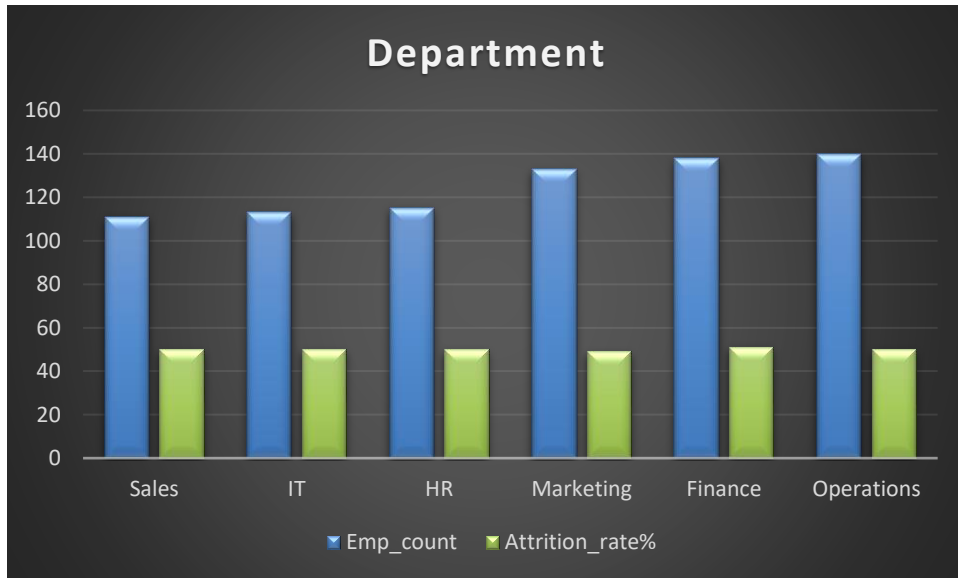
DATA ANALYSIS AND INSIGHT

EMPLOYEE ATTRITION ANALYSIS

1. Department wise attrition rate:

Department	Emp_count	Attrition_count	Attrition_rate%
Sales	111	56	50.00
IT	113	57	50.00
HR	115	58	50.00
Marketing	133	65	49.00
Finance	138	70	51.00
Operations	140	70	50.00

- All departments exhibit a high attrition rate, indicating a widespread issue.
- HR and Finance departments have the highest attrition rates.



2. Position wise attrition rate:

Position	Emp_count	Attrition_count	Attriton_rate%
Chief Executive Officer	1	1	100.00
Chief Operating Officer	1	1	100.00
Chief Technology Officer	1	0	0.00
Head Data Analytics	1	0	0.00
Analyst	6	2	33.00
Content Creator	10	7	70.00
Software Engineer	12	10	83.00
IT Support Specialist	14	6	43.00
System Administrator	15	8	53.00
Creator	16	9	56.00
Data Scientist	16	6	38.00
Data Analyst	17	6	35.00
Account Executive	19	13	68.00
HR Coordinator	20	12	60.00
Marketing Coordinator	24	12	50.00
Recruiter	24	10	42.00
Accountant	27	14	52.00
Operations Manager	27	16	59.00
Sales Manager	27	12	44.00
Sales Representative	28	17	61.00
Supply Chain Analyst	28	18	64.00
HR Manager	29	18	62.00
Marketing Manager	30	15	50.00
Financial Analyst	32	14	44.00
Finance Manager	40	17	43.00
Logistics Coordinator	40	16	40.00

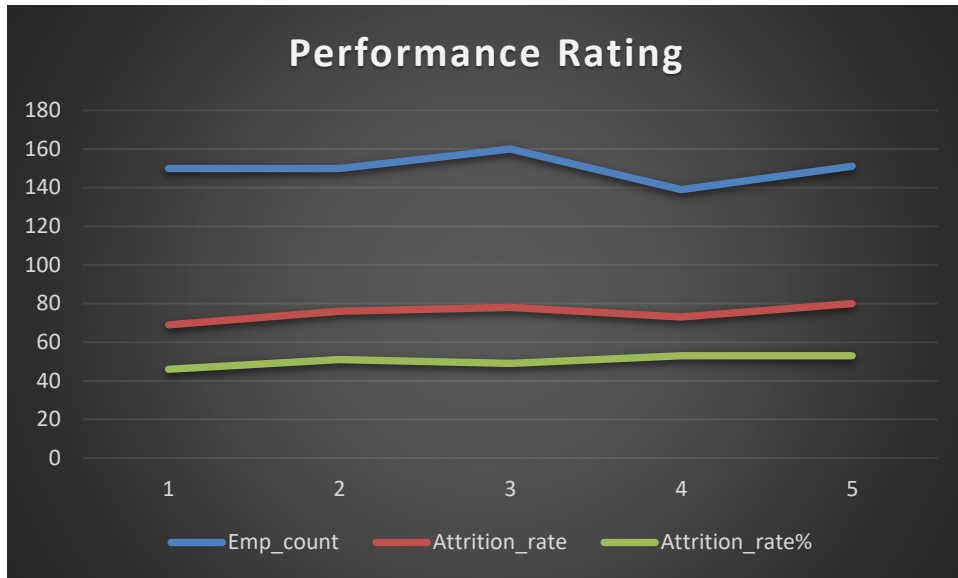
Intern	245	116	47.00
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- Top executives (CEO, COO, CTO) and certain specialized roles (Data Scientist, Software Engineer) experience lower attrition.
- Roles like Content Creator and Sales Representative have higher attrition.
- Interns are anyhow leaving the company.

3. Performance wise attrition rate

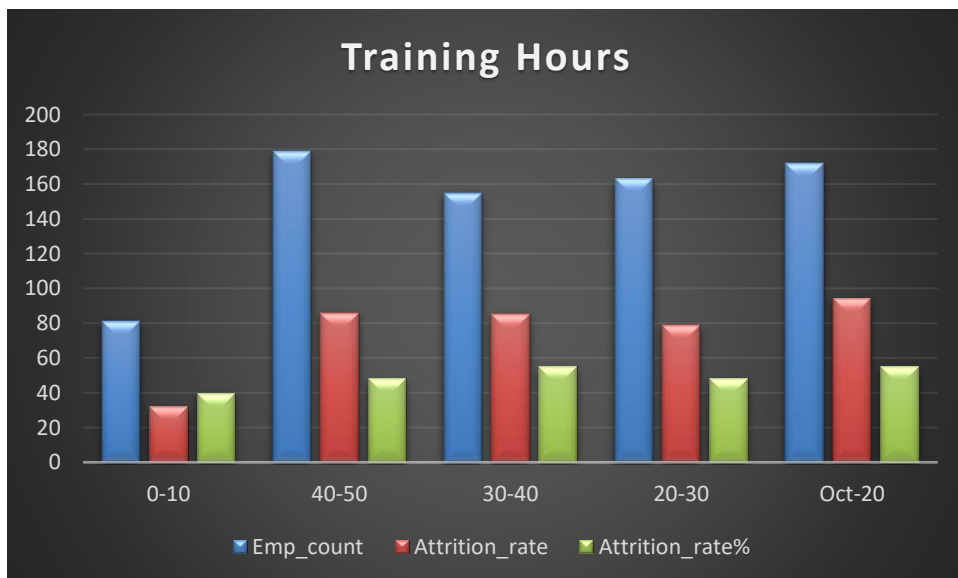
Performance Rating	Emp_count	Attrition_rate	Attrition_rate%
1	150	69	46.00
2	150	76	51.00
3	160	78	49.00
4	139	73	53.00
5	151	80	53.00



- Employees with performance ratings of 4 and 5 show a higher attrition rate.
- There seems to be dissatisfaction among high-performing employees

4. Training hours wise attrition rate:

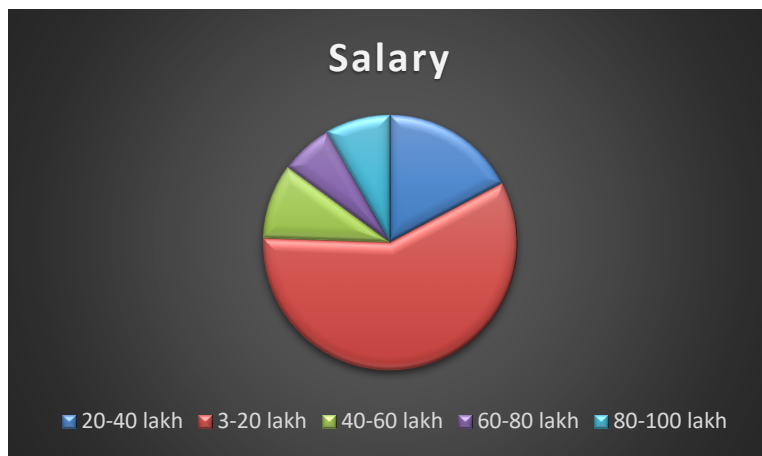
Training_hours_Group	Emp_count	Attrition_rate	Attrition_rate%
5-10	81	32	40.00
40-50	179	86	48.00
30-40	155	85	55.00
20-30	163	79	48.00
10-20	172	94	55.00



- There is a noticeable fluctuation in attrition rates across different training hour categories, indicating that training hours alone may not be the sole driver of attrition
- The highest attrition rate is observed in the 40-50 training hours group.

5. Salary

Salary_Group	Emp_count	Attrition_count	Attrition_rate%
20-40 lakh	131	65	50.00
3-20 lakh	449	219	49.00
40-60 lakh	64	36	56.00
60-80 lakh	51	25	49.00
80-100 lakh	55	31	56.00



- Attrition rates are relatively consistent across salary groups.
- The 40-60 lakh and 80-100 lakh salary groups exhibit higher attrition.

6. Work hours

Work_hours	Emp_count	Attrition_count	Attrition_count%
40	181	98	54.00
45	192	82	43.00
50	195	98	50.00
55	182	98	54.00

- Employees working 45 hours have a lower attrition rate compared to those working 40 or 50 hours.

7. Education level

Education_level	Emp_count	Attrition_count	Attrition_count%
Bachelor's	203	109	54.00
Master's	177	88	50.00

Diploma	205	93	45.00
PhD	165	86	52.00

- Employees with Bachelor's and PhD degrees have higher attrition rates.
- Master's and Diploma holders exhibit relatively lower attrition rates

8. Promotion

Promotion	Emp_count	Attrition_count	Attrition_count%
Yes	252	123	49.00
No	498	253	51.00

- No significant difference in attrition rates between promoted and non-promoted employees.

9. Absenteeism

AbsenteeismGroup	Emp_count	Attrition_count	Attrition_count%
0-5	170	85	50.00
10-15	165	85	52.00
15-20	248	128	52.00
5-10	167	78	47.00

- No clear pattern; all absenteeism groups show comparable attrition rates.

10. Employee engagement score

Emp_engagement_score	Emp_count	Attrition_count	Attrition_count%
1	138	71	51.00
2	166	89	54.00
3	147	67	46.00
4	146	70	48.00
5	153	79	52.00

- Employees with engagement scores of 2 have the highest attrition rate.
- There is no consistent trend based on engagement score.

11. Distance from work

Distance_from_work	Emp_count	Attrition_rate	Attrition_rate%
5-15	178	87	49.00
45+	72	42	58.00
35-45	177	86	49.00
25-35	167	82	49.00
15-25	156	79	51.00

- Employees with a commute of 45+ minutes have a higher attrition rate.
- There is no linear correlation between distance and attrition

12. Job satisfaction

Attrition Status	PeerPressure	WorkLifeBalance	Compensation	Management	JobSecurity
Attrition	222	213	217	238	227
No Attrition	214	230	229	228	237

- Attrition and non-attrition groups show similar levels of Peer Pressure, Work-Life Balance, and Compensation.
- Management and Job Security are slightly lower in the attrition group.

13. Employee benefit

Attrition Status	HealthInsurance	Paid Leave	RetirementPlan	GymMembership	ChildCare
Attrition	233	222	235	218	229
No Attrition	225	224	222	214	213

- No clear distinction in benefit utilization between attrition and non-attrition groups.
- Health Insurance and Retirement Plan are slightly lower in the attrition group.

Overall Averages

1. Average service duration: 6.96 years.
2. Average salary: High.
3. Average training hours: 27.35.
4. Average employee engagement score: 27.26.

Insights

- ❖ High attrition rates were observed across all departments, with HR and Finance showing the highest rates.
- ❖ Top executives and specialized roles had lower attrition, while roles like Content Creator had higher attrition.
- ❖ Employees with performance ratings of 4 and 5 exhibited higher attrition rates.

- ❖ Varied attrition rates were noted across different training hour categories, with the 40-50 group having the highest.

OPTIMIZE EMPLOYEE TRAINING PROGRAMS

1. Performance rating

Training_Hours	AvgPerformance_rating
5-10	2.9630
40-50	2.9553
30-40	3.0645
20-30	2.9755
10-20	2.9767



- Employees with a performance rating of 3 in the 30-40 training hours group have the highest average performance rating.
- The 40-50 training hours group has a slightly lower average performance rating compared to other groups.

2. Department

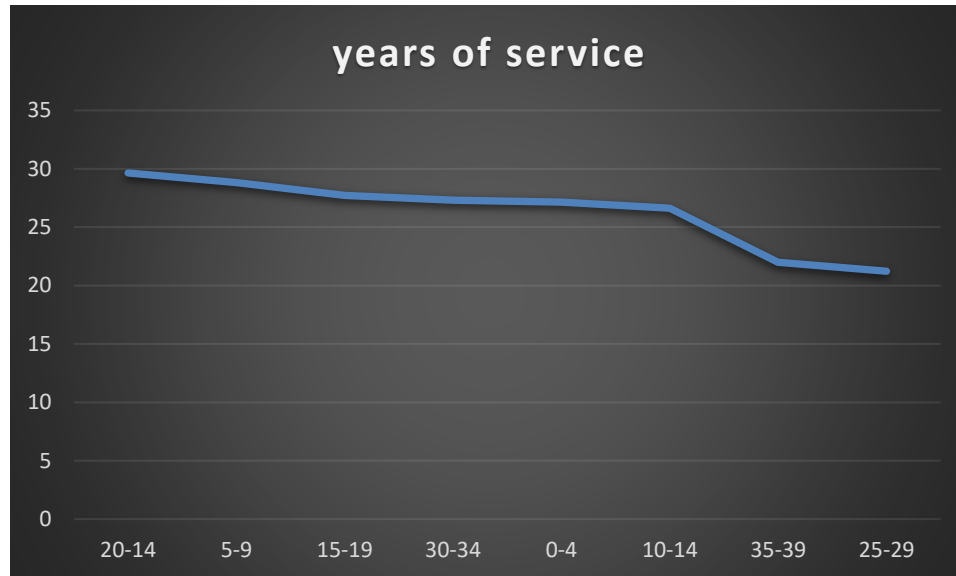
Department	AvgTraining_hours
Marketing	24.3459
HR	27.0957
Sales	27.1351
IT	27.3894
Operations	28.4857
Finance	29.4203



- Finance and Operations departments have higher average training hours compared to other departments.
- Marketing and HR departments have relatively lower average training hours

3. Years of service

Years of service	avgTraining hours
20-14	29.6429
5-9	28.8099
15-19	27.7255
30-34	27.3077
0-4	27.1463
10-14	26.6173
35-39	22.0000
25-29	21.2273

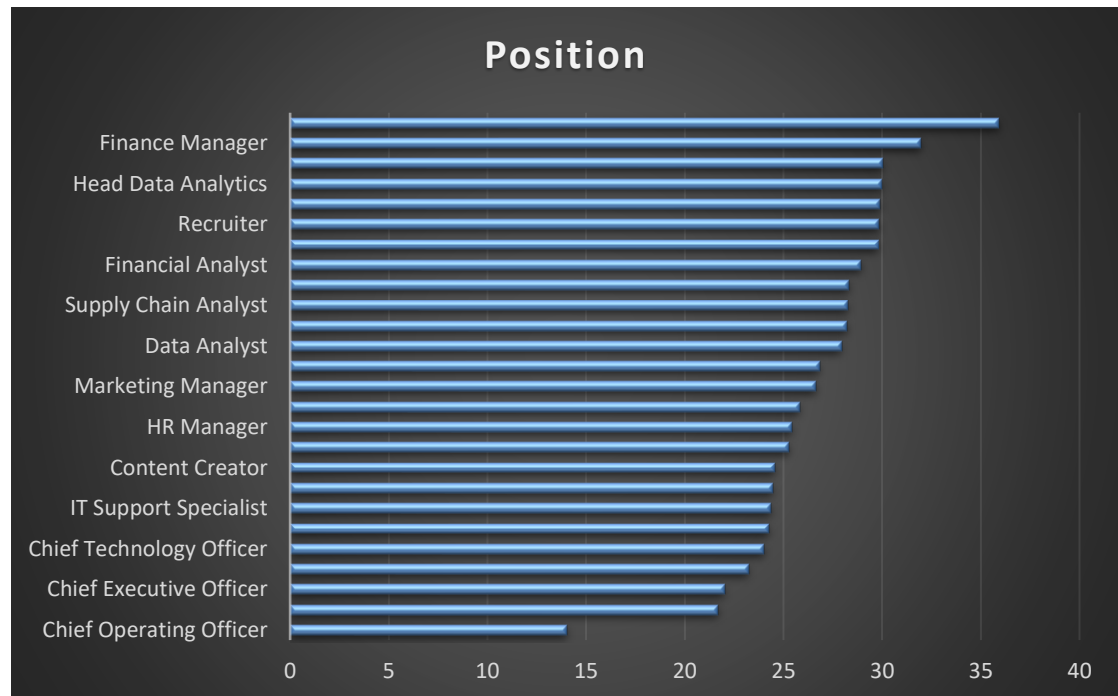


- Employees with 20-24 years of service have the highest average training hours.
- There is a gradual decline in average training hours with fewer years of service.

4. Position

Position	AvgTraining hours
Chief Operating Officer	14.0000
Analyst	21.6667
Chief Executive Officer	22.0000
Sales Manager	23.2222
Chief Technology Officer	24.0000
Account Executive	24.2632
IT Support Specialist	24.3571
Marketing Coordinator	24.4583
Content Creator	24.5769
Operations Manager	25.2593
HR Manager	25.4483
Data Scientist	25.8125
Marketing Manager	26.6333
Intern	26.8204
Data Analyst	27.9412
HR Coordinator	28.2000
Supply Chain Analyst	28.2857
Accountant	28.3333
Financial Analyst	28.9063
System Administrator	29.8000
Recruiter	29.8333
Logistics Coordinator	29.9000
Head Data Analytics	30.0000
Sales Representative	30.0357
Finance Manager	31.9750

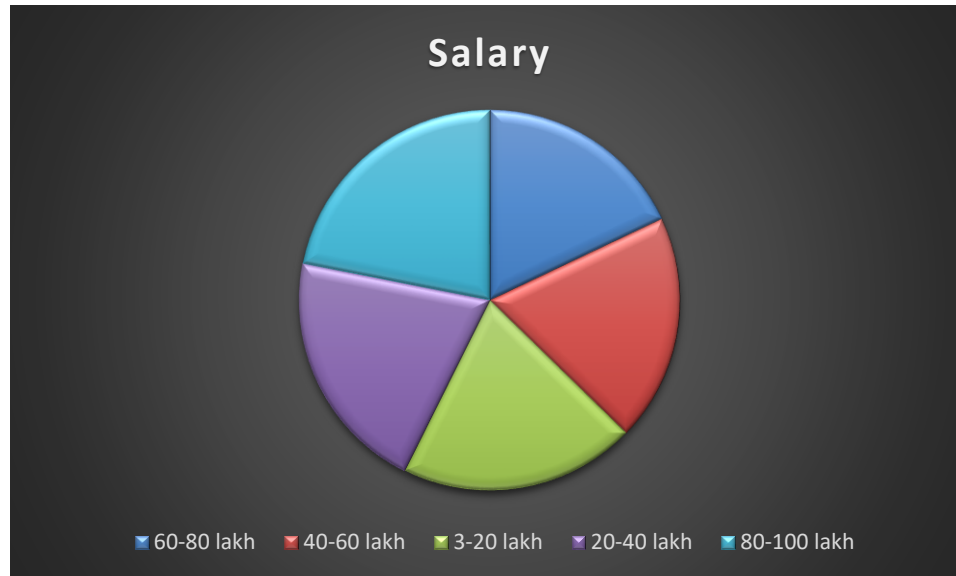
Software Engineer	35.9167
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- Software Engineers and Finance Managers have significantly higher average training hours.
- Chief Operating Officers and Analysts have lower average training hours

5. Salary

Salary	AvgTraining hours
60-80 lakh	24.3922
40-60 lakh	26.3281
3-20 lakh	27.2829
20-40 lakh	28.1832
80-100 lakh	29.7818



- Employees with salaries in the 80-100 lakh range have the highest average training hours.
- The 60-80 lakh salary group has the second-highest average training hours

6. Performance rating

Performance rating	AvgTraining hours
1	27.7533
2	26.5800
3	27.3688
4	28.2662
5	26.8278

- Employees with a performance rating of 4 have the highest average training hours.
- Performance ratings of 2 and 5 have slightly lower average training hours.

7. Promotion

Promotion	AvgTraining hours
Yes	27.8690
No	27.0803

- Employees who received promotions have slightly higher average training hours compared to those who didn't.

8. Education level

Education level	AvgTraining hours
Master's	26.2599
PhD	27.2182
Diploma	27.5463
Bachelor's	28.1921

- Employees with a Master's degree has the lowest average training hours.
- Other education levels have relatively similar average training hours.

9. Absenteeism

Absenteeism	AvgTraining hours
0-5	28.2000
15-20	27.6895
10-15	26.9697
5-10	26.3353

- Employees with 0-5 absenteeism days have the highest average training hours.
- The 5-10 absenteeism days group has the lowest average training hours.

Insights

- ❖ Software Engineers and Finance Managers had significantly higher average training hours.
- ❖ Employees with higher salaries, especially in the 80-100 lakh range, had the highest average training hours.
- ❖ The relationship between training hours and performance ratings showed variations across different groups.

RECOMMENDATIONS

1. For Reducing Attrition Rates
 - ❖ Implement targeted retention strategies for high-performing employees.
 - ❖ Enhance employee engagement initiatives, especially for departments with high attrition.
 - ❖ Consider flexible work hours or remote work options to reduce commute-related attrition.
 - ❖ Conduct surveys or interviews to gather qualitative insights into the factors influencing attrition.
2. For Enhancing Training Programs
 - ❖ Tailor training programs based on departmental needs and employee positions.
 - ❖ Explore personalized training for long-serving employees.
 - ❖ Monitor and reassess the impact of implemented strategies continuously.
 - ❖ Evaluate the effectiveness of training programs for employees with different educational backgrounds.

Conclusion

This comprehensive analysis provides valuable insights into the factors influencing employee attrition and recommendations for optimizing training programs. The CEO can leverage these findings to make informed decisions and implement strategic initiatives that positively impact the organization.