Adviti Pvt. Ltd.: HR Analytics Project

Introduction:

This HR data analysis aims to identify the key factors influencing employee attrition and their overall impact on organizational stability. By exploring the patterns and trends in employee satisfaction, benefits and attrition rate the analysis aims to uncovers actionable insights.

Objectives:

The project focuses on two objectives:

1. To determine the factors influencing employee attrition and propose the strategies to increase retention.
2. To identify the factors that contribute to high employee engagement and recommend strategies to improve engagement.

Data Cleaning and Preparation:

The initial data set contained several inconsistencies. Data cleaning involved:

1. The position column and the gender column are standardized to ensure consistency and clarity. The following transformations are applied:
    a. 'Account Exec.', 'Account Executive', 'AccountExec.', 'AccountExecutive' are updated to 'Account Executive'.
    b. 'Content Creator', 'Creator' is updated to 'Content Creator'.
    c. 'DataAnalyst', 'Data Analyst' are updated to 'Data Analyst'.
    d. 'Analytics Intern', 'Intern', 'SE Interns' are updated to 'Interns'.
    e. 'F' is replaced with 'Female'
    f. 'M' is replaced with 'Male'.
2. For more detailed analysis, subgroups are created within various categories. This allows for deeper insights by enabling comparisons and trend identification across specific segments.
    a. Salary category
        i. Less than 10L
        ii. 10L – 20L
        iii. 20L – 30L
        iv. 30L – 40L
        v. 40L – 50L
        vi. Greater than 50L
    b. Training Hours category
        i. 40+ Hours
        ii. 30 - 40 Hours
        iii. 20 - 30 Hours
        iv. 10 - 20 Hours
        v. Less than 10 Hours
    c. Absenteeism Category
        i. No Leaves
        ii. 1 – 5 days
        iii. 6 – 10 days

       iv. 11 – 15 days

       v. 15+ days

    d. Distance from work category

      40+ Kms

      30 – 40 Kms

      20 – 30 Kms

      10 – 20 Kms

      Less than 10 Kms

3. New Columns, encompassing the Job satisfaction rate and employee benefit satisfaction rate, were created to calculate and analyse overall employee satisfaction levels.

Analysis and Insights:

Employees Attrition Analysis

1. **Age-wise Attrition rate**

AgeGroup	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
21-25	18	18	0	100.0000	0.0000
41-45	44	24	20	54.5455	45.4545
46-50	156	83	73	53.2051	46.7949
31-35	65	33	32	50.7692	49.2308
36-40	56	23	33	41.0714	58.9286
26-30	84	24	60	28.5714	71.4286

- There is 100% attrition rate in the age group of 21-25.
- Employees even with 3 to 5 years of experience has left the company. This might be because no promotion was given for employees who worked for 3 years and 5 years.

2. **Department wise Attrition rate**

Department	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
Sales	74	42	32	56.7568	43.2432
HR	73	40	33	54.7945	45.2055
Marketing	80	41	39	51.2500	48.7500
Finance	99	45	54	45.4545	54.5455
IT	82	32	50	39.0244	60.9756
Operations	13	5	8	38.4615	61.5385
Management	2	0	2	0.0000	100.0000

- Sales department has 56.75% attrition rate, HR department has 54.7945% attrition rate and Marketing department has 51.25% attrition rate.
- IT and Operations department has lowest attrition rate.

3. **Salary wise attrition rate**

Salary_Buckets	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
20L - 30L	40	22	18	55.0000	45.0000
10L - 20L	207	103	104	49.7585	50.2415
< 10L	166	79	87	47.5904	52.4096
30L - 40L	4	1	3	25.0000	75.0000
> 50L	5	0	5	0.0000	100.0000
40L - 50L	1	0	1	0.0000	100.0000

- Salary range of 20L-30L has 55% attrition rate, 10L-20L has 49.75% attrition rate and <10L has 47.5904% attrition rate.
- Year of experience ranges from 1 to 5 years.

4. Promotion wise attrition rate

Promotion	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
No	214	110	104	51.4019	48.5981
Yes	209	95	114	45.4545	54.5455

- About 51.40% employees has left the company because no promotion was given.
- No promotion was given to the employees with 2 to 5 years of experience.

5. Working hours wise attrition rate

Work_Hours	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
40	96	55	41	57.2917	42.7083
55	106	53	53	50.0000	50.0000
50	104	50	54	48.0769	51.9231
45	117	47	70	40.1709	59.8291

- Employees with working hours of 40hrs has highest attrition rate which is 57.29%, whereas employees with working hours of 55hrs has 50% attrition rate.

6. Satisfaction score and employee engagement score

Satisfaction_Score	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
4	86	45	41	52.3256	47.6744
3	90	46	44	51.1111	48.8889
5	89	45	44	50.5618	49.4382
2	80	35	45	43.7500	56.2500
1	78	34	44	43.5897	56.4103

JobSatisfaction_rate	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
100.0000	85	38	47	44.7059	55.2941
20.0000	83	49	34	59.0361	40.9639
80.0000	83	43	40	51.8072	48.1928
40.0000	91	40	51	43.9560	56.0440
60.0000	81	35	46	43.2099	56.7901

Employee_Engagement_Score	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
2	60	60	0	100.0000	0.0000
1	70	70	0	100.0000	0.0000
3	146	75	71	51.3699	48.6301
4	80	0	80	0.0000	100.0000
5	67	0	67	0.0000	100.0000

- Employees who have given satisfaction score 3,4,5 has attrition rate between 50% to 52%.
- Employees with job satisfaction rate of 20% has attrition rate 59.03, job satisfaction rate of 80% has attrition rate 51.80 and job satisfaction rate of 100% has attrition rate 44.70.
- Employee engagement score 1 and 2 has 100% attrition rate, and employee engagement score 3 has 51.36% attrition rate. This could be the one of the main reasons for employee attrition.

7. Performance rating and Absenteeism

Performance_Rating	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
5	83	44	39	53.0120	46.9880
4	80	40	40	50.0000	50.0000
2	87	42	45	48.2759	51.7241
3	91	42	49	46.1538	53.8462
1	82	37	45	45.1220	54.8780

Absenteeism_Buckets	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
1-5 days	95	51	44	53.6842	46.3158
11-15 days	88	45	43	51.1364	48.8636
6-10 days	95	47	48	49.4737	50.5263
15+ days	116	51	65	43.9655	56.0345
No Leaves	29	11	18	37.9310	62.0690

- Performance rating has a decreasing trend where performance rating 5 has the highest attrition rate with 53.01%, whereas performance rating 1 has the lowest attrition rate (45.12%).
- Based on the absenteeism, 53.68% of employees with 1-5 days of absenteeism left the company, followed by 51.13% for those with 11-15 days and 49.47% for those with 6-10 days, lowest being employees with no leaves.

8. Employee Benefit satisfaction rate

EmployeeBenefit_Satisfaction_rate	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
100.0000	83	47	36	56.6265	43.3735
40.0000	81	45	36	55.5556	44.4444
60.0000	84	40	44	47.6190	52.3810
80.0000	83	36	47	43.3735	56.6265
20.0000	92	37	55	40.2174	59.7826

- The employee benefit satisfaction rate shows a decreasing trend in attrition, with 56.62% attrition at 100% satisfaction, 55.55% attrition at 40% satisfaction, 47.61% attrition at 60% satisfaction, and the lowest attrition at 20% satisfaction.

9. Department x Years of Service

Promotion	Years_of_Service	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
Yes	1	34	22	12	64.7059	35.2941
No	5	38	23	15	60.5263	39.4737
No	3	37	22	15	59.4595	40.5405
No	1	37	21	16	56.7568	43.2432
No	4	43	24	19	55.8140	44.1860
Yes	5	50	26	24	52.0000	48.0000
No	2	39	20	19	51.2821	48.7179
Yes	2	39	18	21	46.1538	53.8462
Yes	4	40	18	22	45.0000	55.0000
Yes	3	28	11	17	39.2857	60.7143
No	15	1	0	1	0.0000	100.0000
Yes	6	18	0	18	0.0000	100.0000
No	10	1	0	1	0.0000	100.0000
No	6	18	0	18	0.0000	100.0000

- Employee with 1 year if experience who have received the promotion has higher attrition rate, suggesting promotion alone are insufficient to retain the employees.

- Employees who have been working for more than 1 year has not received the promotion has attrition rate between 55% to 60%, indicating that employees might have perceive a lack of growth or career progression, leading to eventual turnover.

10. Salary x Years of Service

Salary_Buckets	Years_of_Service	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
30L - 40L	4	1	1	0	100.0000	0.0000
20L - 30L	4	8	7	1	87.5000	12.5000
< 10L	1	31	23	8	74.1935	25.8065
20L - 30L	5	3	2	1	66.6667	33.3333
< 10L	5	30	17	13	56.6667	43.3333
10L - 20L	5	53	30	23	56.6038	43.3962
20L - 30L	2	9	5	4	55.5556	44.4444
10L - 20L	3	41	22	19	53.6585	46.3415
10L - 20L	1	27	14	13	51.8519	48.1481
10L - 20L	4	31	16	15	51.6129	48.3871
10L - 20L	2	42	21	21	50.0000	50.0000
20L - 30L	3	4	2	2	50.0000	50.0000
< 10L	3	19	9	10	47.3684	52.6316
< 10L	2	26	12	14	46.1538	53.8462
20L - 30L	1	13	6	7	46.1538	53.8462
< 10L	4	43	18	25	41.8605	58.1395

- Employee with 5 years of experience with salary less than 10 lakhs has significant attrition rate. Consider annual salary adjustment or performance-based salary increments to retain the employees.
- Attrition rates in the 10 to 20 lakhs salary range hover around 50% to 55% across multiple years of service. This may indicate that attention to these employees can increase the retention rate.

11. Salary x Job Satisfaction

Salary_Buckets	JobSatisfaction_rate	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
30L - 40L	20.0000	1	1	0	100.0000	0.0000
20L - 30L	20.0000	5	4	1	80.0000	20.0000
20L - 30L	80.0000	6	4	2	66.6667	33.3333
10L - 20L	20.0000	46	28	18	60.8696	39.1304
< 10L	80.0000	34	20	14	58.8235	41.1765
< 10L	20.0000	30	16	14	53.3333	46.6667
20L - 30L	100.0000	10	5	5	50.0000	50.0000
20L - 30L	60.0000	4	2	2	50.0000	50.0000
10L - 20L	60.0000	41	20	21	48.7805	51.2195
10L - 20L	80.0000	39	19	20	48.7179	51.2821
< 10L	100.0000	31	15	16	48.3871	51.6129
20L - 30L	40.0000	15	7	8	46.6667	53.3333
10L - 20L	40.0000	39	18	21	46.1538	53.8462
10L - 20L	100.0000	42	18	24	42.8571	57.1429
< 10L	40.0000	36	15	21	41.6667	58.3333
< 10L	60.0000	35	13	22	37.1429	62.8571

- Employee in the salary range 10 to 20 lakhs has 20% job satisfaction.
- A significant number of employees in the salary range less than 10 lakhs has lower job satisfaction rate, indicating salary also influence job satisfaction. Attrition in this salary bracket could increase if no clear salary progression or upskilling opportunities are provided.

12. Distance from Work x Work Hours

Distance_from_Work_Buckets	Work_Hours	TotalEmployee	Attrition_Yes	Attrition_No	Attrition_Yes_%	Attrition_No_%
30 - 40 Kms	40	15	10	5	66.6667	33.3333
40+ Kms	50	18	11	7	61.1111	38.8889
20 - 30 Kms	40	23	14	9	60.8696	39.1304
10 - 20 Kms	50	25	15	10	60.0000	40.0000
10 - 20 Kms	40	19	11	8	57.8947	42.1053
10 - 20 Kms	55	19	11	8	57.8947	42.1053
40+ Kms	45	33	18	15	54.5455	45.4545
< 10 Kms	40	17	9	8	52.9412	47.0588
20 - 30 Kms	55	28	14	14	50.0000	50.0000
40+ Kms	40	22	11	11	50.0000	50.0000
40+ Kms	55	20	10	10	50.0000	50.0000
30 - 40 Kms	55	29	14	15	48.2759	51.7241
20 - 30 Kms	50	32	15	17	46.8750	53.1250
< 10 Kms	45	16	7	9	43.7500	56.2500
< 10 Kms	55	10	4	6	40.0000	60.0000
20 - 30 Kms	45	24	9	15	37.5000	62.5000
30 - 40 Kms	45	22	7	15	31.8182	68.1818
30 - 40 Kms	50	19	6	13	31.5789	68.4211

- Distance from work and working hours has a strong correlation. Employees who are working for 40 hours are having a significant attrition rate if their distance from the organization is more. Employees living within the distance of 10kms also has a significant attrition rate.
- Employees working for more than 50 hours and their distance from work is more than 40kms has more than 50% attrition rate. Also 30 to 40kms from work and working hours are more than 50 has about 50% attrition rate.
- Optimizing work hours and remote or hybrid work options can increase the retention.

Overall Comparison

Department	Salary_Buckets	Work_Hours	Years_of_Service	Promotion	Employee_Engagement_Score	JobSatisfaction_rate	EmployeeBenefit_Satisfaction_rate	TotalEmployee	Attrition_Yes_%
Operations	< 10L	50	3	No	1	100.0000	80.0000	1	100.0000
Operations	< 10L	50	4	No	3	40.0000	20.0000	1	100.0000
Sales	10L - 20L	45	3	No	2	60.0000	100.0000	1	100.0000
Marketing	10L - 20L	50	3	No	2	60.0000	100.0000	1	100.0000
Sales	< 10L	55	4	No	3	80.0000	20.0000	1	100.0000
Marketing	10L - 20L	50	5	No	3	20.0000	60.0000	1	100.0000
HR	10L - 20L	40	5	No	3	60.0000	60.0000	1	100.0000
HR	< 10L	40	3	No	2	80.0000	40.0000	2	100.0000
Marketing	10L - 20L	40	4	No	2	20.0000	80.0000	1	100.0000
Marketing	< 10L	40	5	No	1	100.0000	40.0000	1	100.0000
HR	10L - 20L	55	3	No	2	100.0000	80.0000	1	100.0000
Sales	< 10L	50	5	No	3	60.0000	60.0000	1	100.0000
Sales	< 10L	50	4	No	2	60.0000	40.0000	1	100.0000
Finance	< 10L	50	3	No	3	60.0000	20.0000	1	100.0000
Sales	< 10L	45	4	No	1	80.0000	100.0000	1	100.0000
Marketing	10L - 20L	45	3	No	1	60.0000	100.0000	1	100.0000
HR	10L - 20L	40	3	No	2	40.0000	20.0000	1	100.0000
HR	20L - 30L	50	4	No	1	80.0000	60.0000	1	100.0000
Sales	< 10L	45	5	No	3	40.0000	100.0000	1	100.0000
IT	< 10L	45	5	No	3	100.0000	80.0000	1	100.0000

- Employees with high job satisfaction (80% - 100%) are leaving the company across the departments. This indicates that job satisfaction alone is not enough to retain employees, other factors like promotion, benefits, and work-life balance are equally important.
- Across the departments, employees with no promotion show 100% attrition, regardless of their satisfaction score and salaries.
- Low salaries (<10 lakhs) are a significant factor for high attrition rates. Employees with higher salary still leave the company if promotions, benefits, or workload are not addressed.
- Employees working long hours (50 – 55 hrs) are more likely to leave, even with high satisfaction levels.

Enhancing Employee Engagement

1. Department x Employee Engagement Score
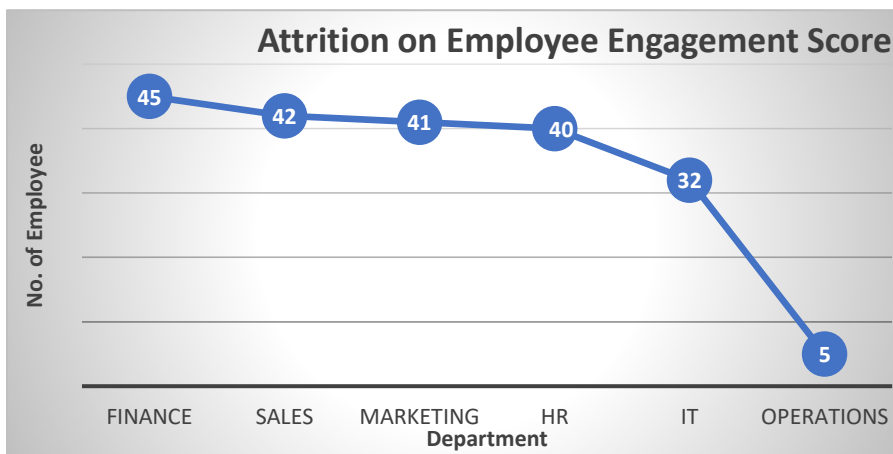
- The analysis shows a 100% attrition rate among employees who gave engagement scores of 1 and 2, with 45 people leaving from the finance department, 42 from sales, and 41 from marketing.
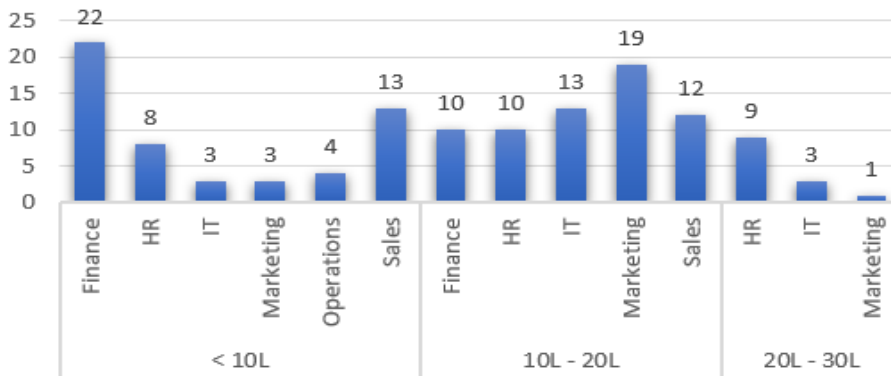
2. Salary x Employee Engagement Score

Employee_Engagement_Score	Salary_Buckets	TOTAL
1	10L - 20L	33
2	10L - 20L	31
1	< 10L	31
2	< 10L	22
2	20L - 30L	7
1	20L - 30L	6

- The comparison of employee engagement scores with salary reveals that most attrition occurred in the brackets of 10-20 lakhs, with 64 employees leaving and less than 10 lakhs, with 53 employees leaving, while only 13 employees left in the 20-30 lakh bracket.

### 3. Salary x Department

Salary x Department

- Based on the data for Employee Engagement Scores of 1 and 2, which show 100% attrition, 22 employees in Finance, 13 in Sales, and 8 in HR department left in the salary bracket less than 10 lakhs; 19 in Marketing, 13 in IT, and 12 in Sales left in the 10-20 lakh bracket; 9 in HR and 3 in IT left in the 20-30 lakh bracket.
- Employees may be leaving due to limited career growth, inadequate compensation, high stress, poor management, cultural misalignment, and lack of flexibility.

4. **Training Hours x Employee Engagement Score**
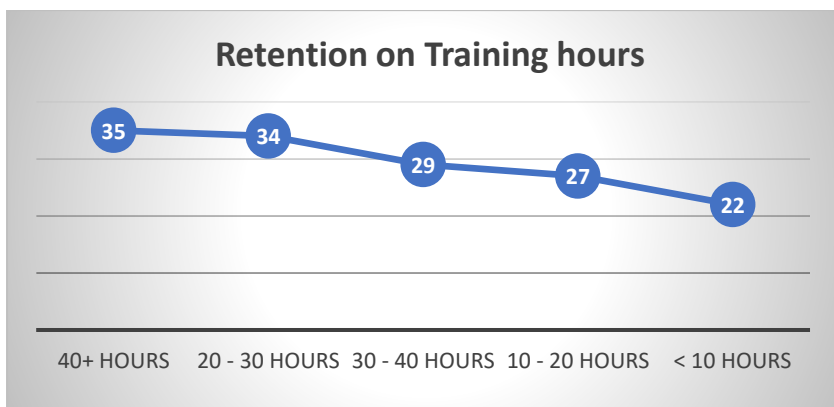
- Based on the analysis, it is evident that higher training hours correlate positively with engagement score, particularly for scores of 4 and 5, where were employee retention is 100%. Employees with 40+ hours of training represent the highest engagement, while engagement decreases as training hour reduces.

5. **Working Hours x Employee Engagement Score**

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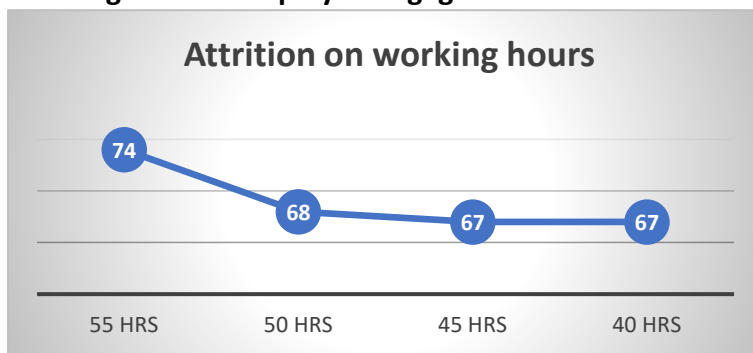
- The analysis indicates that excessive working hours, particularly 55 hours, correlate with the highest attrition rates (74 employees leaving). A gradual reduction in working hours is associated with fewer employees leaving, although attrition persists even at 40 hours.

Recommendation

- To address the high attrition rate among employees aged 21 to 25 who have been working for 3 to 5 years, provide a clear and transparent career path, including promotions and role transitions. Also recognize and reward their contributions with merit-based promotions and salary increases.
- Improve Employees benefit satisfaction bye offering flexible work arrangements, better healthcare, and other perks.
- Reduce work hours to improve work-life balance, especially for departments like Sales, Operations, and IT to prevent burnout and increase job satisfaction.
- Focus on retaining employees with high satisfaction rate (80% - 100%) by addressing their specific concerns like growth opportunities and work conditions.
- Focus on providing at least 30hrs of high-quality training based on employee's role, skill levels and career aspiration to ensure relevance and interest.
- Develop department-specific retention plans, as the factors influencing attrition vary.
- Conduct survey and exit interviews to understand specific reasons for dissatisfaction and address them proactively. Also provide counselling and stress management programs to help employees cope with demands.