

TECHNOCOLABS SOFTWARES

Internship Mini-Project

i We completed this mini-project at Technocolabs Softwares which honed our skills and bolstered our experience for real-time problems. The technologies majorly used are GitBash/Git CLI/Linux, MS Excel, Python and Tableau.

OVERVIEW

i A comprehensive analysis of the attrition at ACME Corporation.

This project aims to provide insights into the factors influencing employee attrition and predict which employees will likely leave the company. Acme Corporation, a leading tech company, faces a significant challenge with employee turnover. The HR department is concerned about the increasing attrition, which negatively impacts team dynamics, project continuity, and overall company morale. Acme Corporation wants to leverage data analytics and machine learning to understand the factors influencing employee turnover and predict which employees might leave soon.

It's to be noted that previous report has also been used as a reference for an in-depth analysis.

The Objective

i The purpose is to find a relation between different domains of the dataset and attain reasonable conclusions that can be further worked upon.

The objective of this task is to analyze key metrics related to career development, identify areas for improvement, and propose actionable strategies to support employee advancement within the organization.

The Opportunity

i Opportunity to perform an in-depth analysis and execute tasks accordingly

Goal #1: Data Exploration and Visualization

Goal #2: Descriptive Analytics

Goal #3: KPI Analytics

Opportunity: Learn to Use Power BI

Key Findings and Areas of Improvements

Promotion Timelines

- **Findings:** Employees in certain departments experience longer waits for promotions, leading to potential dissatisfaction.
- **Improvement:** Implement clear and standardized promotion criteria and timelines across all departments.

Employee Tenure

- **Findings:** High turnover rates in specific departments suggest a lack of career growth opportunities.
- **Improvement:** Establish regular career development discussions and clear progression paths to retain talent.

Stagnation in Current Roles

- **Findings:** Extended periods in the same role can lead to disengagement and lack of growth.
- **Improvement:** Promote role rotation and skill development initiatives to keep employees engaged and moving upward.

Educational Advancement

- **Findings:** Career advancement appears skewed towards employees with higher education levels.
- **Improvement:** Provide support for educational advancement and continuous learning to equalize career growth opportunities.

Training and Development

- **Findings:** Inadequate access to training limits skill development and career progression.
- **Improvement:** Expand and diversify training programs to cover a broader range of skills and make them accessible to all employees.

Performance Review Processes

- **Findings:** Lack of effective performance reviews and feedback impacts employee development.
- **Improvement:** Introduce comprehensive performance review systems that include career development planning and regular feedback.

The Solution and Execution Strategies



Refer to visualisations made in Power BI to comply with the following inferences and recommendations. It is recommended that you follow Key Value Influencers to target the issues at various departments.

Based on the analysis, several key recommendations can be made:

Standardize Promotion Criteria and Timelines

- Develop a clear set of promotion criteria applicable across all departments.
- Establish a timeline for promotions, ensuring fairness and transparency in career advancement.

Implement Regular Career Pathing Discussions

- Schedule bi-annual career development meetings for all employees.
- Create individualized career path plans that align employee goals with organizational needs.

Introduce Role Rotation Programs

- Create a program that allows employees to experience different roles within the organization.
- Encourage participation in role rotation to broaden skill sets and prepare employees for higher responsibilities.

Support Educational Advancement

- Offer scholarships or tuition reimbursement for employees pursuing further education.
- Partner with educational institutions to provide discounted or free courses relevant to employees' career paths.

Expand Training and Development Opportunities

- Launch a comprehensive training program that covers technical, soft, and leadership skills.
- Use e-learning platforms to make training accessible to all employees, regardless of location or time constraints.

Enhance Performance Review Processes

- Implement a robust performance review system that includes 360-degree feedback.
- Incorporate career development goals into performance reviews to ensure continuous growth and alignment with career aspirations.

Conclusion

By addressing these areas and implementing the proposed strategies, the organization can foster a more dynamic and supportive environment for employee career growth. This will not only improve job satisfaction and retention but also enhance overall organizational performance.

This detailed analysis provides actionable insights and recommendations to help Acme Corporation reduce attrition and improve overall employee engagement and satisfaction.

OUR PROPOSAL

i During this case study Sales department was particularly highlighted.

Acme shares high reviews on GlassDoor and AmbitionBox. But the current rate of attrition has understandably reduced the trust in youth and the current average rate of attrition 16.12% is affected by some key factors along with many others.

The key factors though might not seem to be related but have a lasting impact on any company and the sentiments of employees, and attrition acts as fuel to fire. During my study we found these factors to impact mostly the Sales department. The analysis suggests distress among employees in the Sales department. Furthermore, unexpectedly the trend doesn't seem to follow any gender or marital status bias. It is also to be mentioned the relation between hourly rates, daily rates, monthly rates, total working experience, years in current role and monthly income is also a little ambiguous irrespective of departments. Therefore, it is highly recommended that Acme officials work on administrative as well as interpersonal levels to regain the confidence of youth.

Kindly note that although out of 237, 122 resignations supposedly represent they will still impact the organisation and have been considered, considering 51.44% of 237 is not a small amount and the data might have been falsified under pressure from superiors. Therefore, it is highly recommended that Key Value Influencers are studied in detail and actions are taken accordingly.

Rationale

i Description of following this pattern.

- Research: Provided me with ample opportunities to study and delve deeper into the data along with honing my analysis skills.
- Each step of analysis led me to conclusive details of the dataset.
- Alignment with the Mission: The reason and departments affected by attrition became clearer by effectively representing data using Power BI.
- Current resources/technology: Excel, Python, MS SQL Server, MS Power BI, MS Word (in order of timeline)

Technical/Project Approach

i To complete the project, I have primarily focused on using M Power BI.

To complete the given project, I primarily relied on tools provided by Power BI and analysed how I can improve my approach to analysis, therefore I utilised ample amount of time honing my Power BI skills and learning more

After that, I dived right into the problem statement as was required and included the following points:

Dashboard Components and Key Insights:

1. Review of Years at Company by Attrition and Department and Related Key Influencers:

- Rate of attrition (True) had the highest Average of TotalWorkingYears (8.76) and Average of YearsAtCompany (5.51).
- The Department with the highest Average of TotalWorkingYears and Average of YearsAtCompany was Sales.

- Most Attrition were above 7.64 in Average of TotalWorkingYears and above 4.88 in Average of YearsAtCompany.
- When age is 21 or less attrition is 3.57 times more likely to be true compared to all other values of ages. This contains 2.79% of the data.
- When average of years at company is 1 or less the attrition is 2.70 times more likely to be true. This contains approximately 15% of the data.
- When the department is sales attrition is 1.46 times more likely to be true. This contains approximately 30.39% of the data.

2. Years in Current Role by Total Working Years And Department and Related key Influencers:

- Rate of attrition is 3.23 more likely to be true when the total working years of the employees is 2 or less than 2. This influencer contains approximately 8.37% of the data.
- Rate of attrition is 2.70 more times likely to be true when years at ACME is 1 or less than 1. This influencer contains approximately 14.63% of the data.
- Rate of attrition is 2.60 more times likely to be true when the Job Level is 1. This influencer contains approximately 36.94% of the data.
- Rate of attrition is 2.24 times more likely to be true when the years in current role is 0 or less. This influencer contains 16.60% of the data.
- Rate of attrition is 1.58 times more likely to be true when Job Satisfaction is 1. This influencer contains approximately 19.66% of the data.
- Rate of attrition is 1.46 times more likely to be true when department is Sales. This influencer contains approximately 30.34% of the data.

3. Years Since Last Promotion by Department Performance and Job Role and Related Key Influencers:

- The probability of Attrition being true increased the most (2.70 times) when JobRole was Sales Representative. This makes around 5.65% of the data.
- When job role is Laboratory technician the attrition is 1.66 times more likely to be true. This makes around 17.62% of the data.
- When the department is sales the attrition is 1.46 times more likely to be true. This makes around 30.345% of the data.

4. Relation Between Education and promotion and Related Key Influencers:

- When total working years is more than 20 the probability of average years since last promotion is observed to be 3.23 times more. This makes up to 14.08% of the data. In contrast, if the total working years decrease the average years since last promotion also decrease, implying that promotion is based on experience.
- When average of total working years is between 3 and 7 the average years since last promotion is lowered by 1.72 units, which further complements the above statement. This makes around 24.29% of the data.

To achieve the aforementioned successfully I followed the following instructions as supervised:

1. Review Years at Company:

- Analyze the average number of years employees have been with the company. Identify any trends or discrepancies across different departments or employee groups.

2. Assess Years in Current Role:

- Evaluate the average number of years employees have been in their current roles. Look for any patterns or correlations with factors such as job satisfaction or performance.

3. Evaluate Years Since Last Promotion:

- Review the average number of years since employees were last promoted. Identify any departments or roles where employees have gone extended periods without promotion.

4. Examine Distribution of Education Levels:

- Explore the distribution of employees' education levels across the organization. Determine if there are any correlations between education level and career advancement.

Resources



List of Resources Accessible During the Project

- GitHub Repository
- Technocolabs Softwares GitHub repository to Download Dataset From
- Unhindered Support from Technocolabs Softwares
- Python
- MS Excel
- MS SQL SERVER
- MS Power BI
- MS Word
- WSL2

Timeline for Execution

Details of Timeline of Execution

Key project dates are outlined below. Dates are best-guess estimates and are subject to change until a contract is executed.

The following table shows how the tasks were divided and how they were executed.

Description	Start Date	End Date	Duration
Project Start	June 23, 2024	June 26, 2024	
Milestone 1: Understanding and Practicing More Tools of Power BI	June 24, 2024	June 24, 2024	2 Hours
Milestone 6: Making Visual Representation of Data with Power BI	June 24, 2024	June 25, 2024	1.5 Days
Milestone 7: Writing Detailed Project Report and Pushing it to GitHub	June 25, 2024	June 26, 2024	1.5days
Project End	June 26, 2024	June 26, 2024	

Supplied Material

The following materials were supplied by Technocolabs Softwares beforehand along with the problem statement through GitHub.

Materials Supplied by Technocolabs Softwares	Due Date*
Dataset of Acme's Employee Detail	June 1, 2024
Instructions for Dashboard Components	June 20, 2024
Task Instructions	June 20, 2024

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