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Employee Attrition Dashboard Using Tableau

Kovuri Sanjana[1], Kurelli Vaishnavi[2]
[1, 2]*Department of Computer Science and Engineering, Malla Reddy Engineering College for Women, JNTUH University, Hyderabad, 500100*

Abstract: ***Tableau is a powerful and fastest growing data visualization tool used in the Business Intelligence Industry. It helps in simplifying raw data in a very easily understandable format. It also allows non-technical users to create customized dashboards. The purpose of this paper is to visualize and analyse the employee attrition rate using the Tableau visualization tool by considering various important factors that play crucial role in affecting the attrition rate. In order to visualize and predict the attrition rate of employees of an organization, we proposed an intelligent, flexible and effective system that helps the managers to identify the valuable employee and try to retain them. The attrition rate can be analysed based on various factors such as job roles, years since last promotion, gender and number of companies worked.***
Keywords: Employee Attrition, Tableau, Attrition Analysis, Visualization, Employee Turnover, Dashboards

I. INTRODUCTION

Employee Turnover is the maximum critical element that reasons the massive loss to the organization. There are many motives for which the person may depart the organization, such as; income dissatisfaction, stagnant professional growth, etc. The loss isn't always simplest in phrases of the cash however additionally the organization from time to time loses the professional personnel who play a vital role in an organization.

If the organization can visualize and are expecting the worker attrition (employees who are going to leave the organization) in close to the future, they also can work on retention in advance and keep away from the lack of precious workers [1, 2]. Using visualization tools, specifically Tableau, we will visualize and are predicting the worker attrition. The tableau consists of making device learning, statistics, and herbal language greater beneficial to reinforce human creativity in analysis. Thus, Managers can work on choosing the precious personnel and attempt to keep them.

II. LITERATURE REVIEW

Most research cognizance [3], [4] on analysing and tracking clients and their behaviour, and do now no longer cope with the primary property of a company, as represented via way of means of its employees. Many research analysed worker attrition. A present study confirmed that worker demographics [5] and job-associated attributes are the elements that maximum have an effect on worker attrition, together with the profits and the length of the employment relationship.

Other studies evaluated the effects of demographic attributes and worker absenteeism [6] on attrition. Authors centred simplest on work-particular elements [7].

They in comparison a Naïve Bayes classifier [8] and the selection tree set of rules J48 in predicting the chance of a worker departing from the company. In particular, methodologies had been evaluated for every set of rules: tenfold cross-validation and percent break up 70.

The outcomes confirmed an accuracy of 82.4% and a wrong category of 17.6% with J48 the usage of tenfold cross-validation, even as there has been an accuracy of 82.7% and a wrong category of 17.3% the usage of percent break up 70. In contrast, the Naïve Bayes classifier received an accuracy of 78.8% and a wrong category of 21.2% the usage of tenfold cross-validation, even as an accuracy of 81% and a wrong category of 19% turned into received the usage of percent break up 70. Authors [9] explored the software of Logistic Regression while predicting worker turnover and received an accuracy of 85% and a fake bad price of 14%.

III.STUDY OBJECTIVE

The main objective of this paper is to create simple and innovative dashboards where one can analyses the aspects that contribute to attrition.

By visualizing these elements, organizations can rectify errors in the work culture and improve their management system. In some areas, they can also predict the attrition rate for the future and take preventive measures. The chosen technology enables non-technical people to understand the analysis clearly.

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IV. RESULTS AND DISCUSSIONS

A. Sheet - 1: Key Performance Indicators

A Key Performance Indicator is a measurable value that demonstrates how effectively a company is achieving key business objectives. KPI are business metrics used by corporates and managers to track and analyze factors which are crucial for the success of the company.

Findings: We have taken the average of: age, daily rate, distance from home, education level, environment satisfaction, hourly rate, job involvement job level, job satisfaction, monthly income, monthly rate, no of companies worked, percent salary hike, performance rating, relationship satisfaction, standard hours, stock option level, total working years and count of employees.

KPI

Avg. Age	37
Count of WA_Fn-..	1,470
Avg. Daily Rate	802
Avg. Distance Fr..	9
Avg. Education	3
Employee Count	1,470
Avg. Environmen..	3
Avg. Hourly Rate	66
Avg. Job Involve..	3
Avg. Job Level	2
Avg. Job Satisfa..	3
Avg. Monthly Inc..	6,503
Avg. Monthly Ra..	14,313
Avg. Num Compa..	3
Avg. Percent Sal..	15
Avg. Performanc..	3
Avg. Relationshi..	3
Avg. Standard H..	80
Avg. Stock Optio..	1
Avg. Total Worki..	11

Fig. 1 Key Performance Indicators

B. Sheet - 2: Attrition by Job Role

In this sheet, we are taking the job role as the dimension. There are nine job roles in the given data. We're analyzing the attrition rate with respect to the number of people leaving each role. This gives us a forecast of the roles which are most popular and the ones which are likely to diminish.

Findings: Here, we can see that the highest attrition is in the Laboratory Technician role followed by Sales executive, Research Scientist, Sales Representative, Human Resources, Manufacturing Director, Healthcare Representative, Manager and the least is in the Research Director Role.

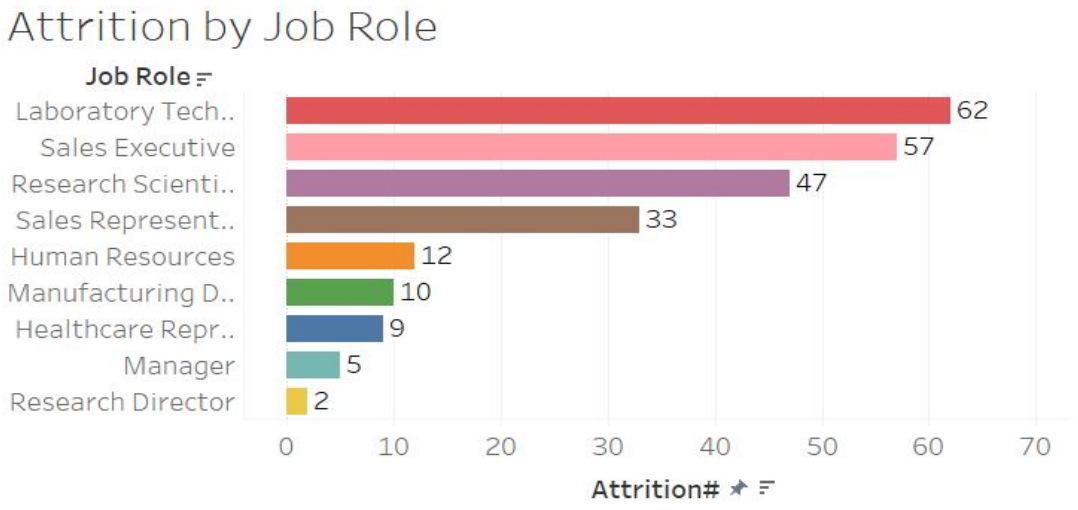


Fig. 2 Attrition by job role

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C. Sheet - 3: Attrition by Department

In this sheet, we are going to analyse the attrition with respect to the department. The dataset has three departments. This analysis can help us know which department has flaws and the department managers can further take measures to improve their employee satisfaction.

Findings: The pie chart shows that the department of Research & Development has the highest attrition rate with 65.37% of total attrition in the company, followed by Sales department with 30.34% and the least is in Human Recourses with 4.29%.

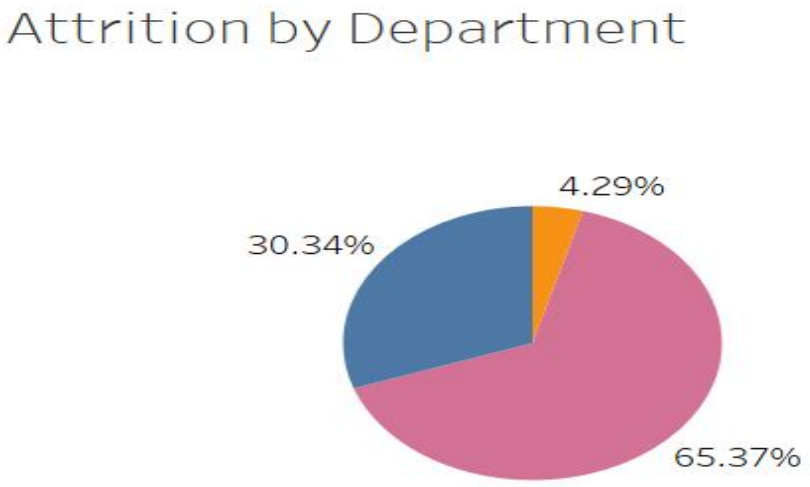


Fig. 3 Attrition by Department

D. Sheet - 4: Attrition Relation with Gender

The orientation and preferences of male & female differ in respect of professional matters. The reasons for attrition amongst gender have also been observed to be different. Here, the attrition rate of male & female is analysed in each job role.

Findings: We can observe here that the percentage of attrition in male is higher than that of female in most job roles: Laboratory Technician, Manager, Manufacturing Director, Research Scientist, Sales Executive and Sales Representative; contrary in Healthcare Representative; equal in Human Resources and Research Director.

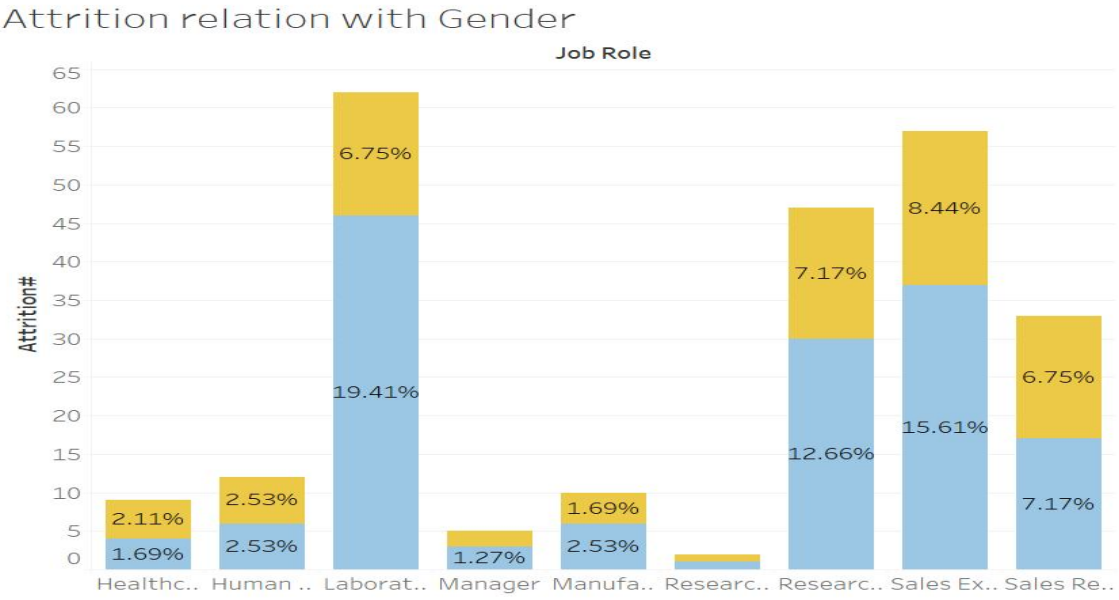


Fig. 4 Attrition Relation with Gender

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E. Sheet - 5: Attrition w.r.t Marital Status

There is an interaction between marital status and gender, leaving the company. We have also considered the analysis of attrition with respect to monthly income for both genders. We can see that the average income of the people who left the company is much less than that of people who stayed.

Findings: Married males tend to leave more than married females. Divorced females leave the least, next divorced males leave the least. On the other hand, single males leave the most followed by single females. By looking at the bar chart, it can also be said that a lower monthly rate could be a cause for higher attrition rates of these employee groups.

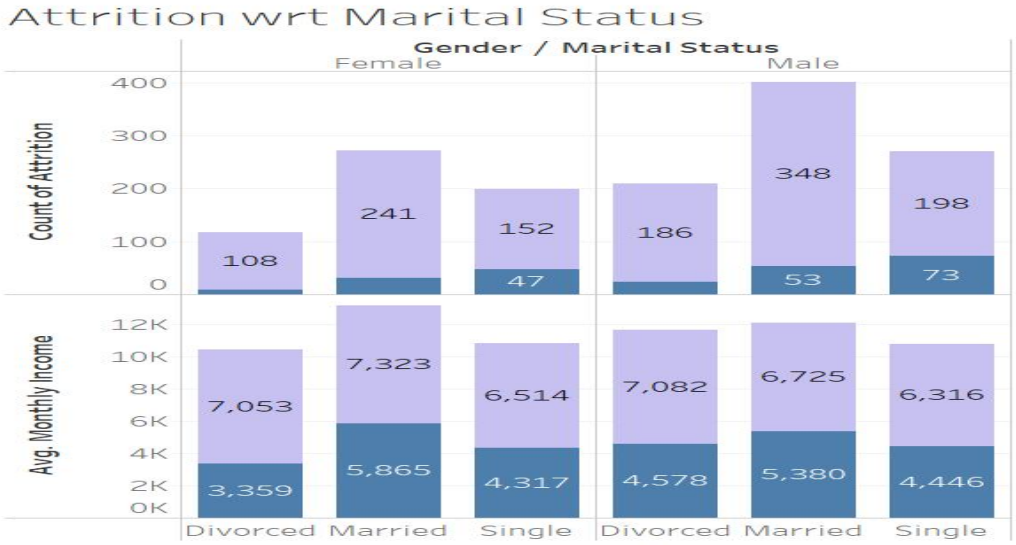


Fig. 5 Attrition w.r.t Marital Status

F. Sheet - 6: Attrition Relation w.r.t Number of Companies Worked

In this sheet, we analyze how the number of companies worked affects the attrition rate. This analysis helps us look into the job roles which have the highest attrition. Based upon these insights the manager or HR will take necessary actions to know the reason for the attrition in these job roles.

Findings: We can see that there is a high attrition count in job roles like Laboratory Technician, Sales Representative, Research Scientist, and Sales Executive. These people have left their first company according to the data. This rate gradually decreases as the number of companies increase.

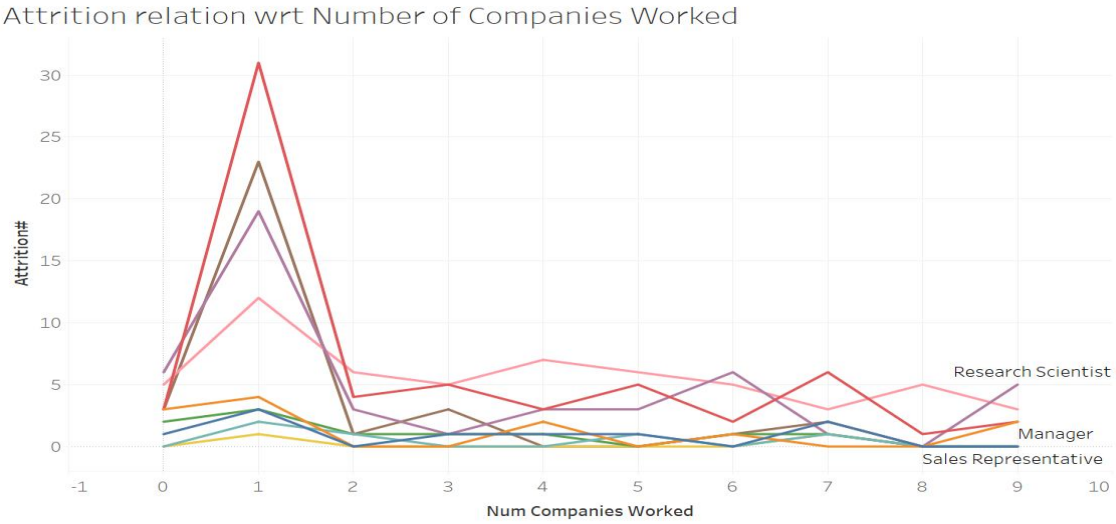


Fig. 6 Attrition relation w.r.t Number of Companies Worked

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G. Sheet - 7: Attrition w.r.t Years Since Last Promotion

This sheet represents the attrition with respect to the years since the last promotion. Promotion improves the ambition of employees and boosts their passion. The policy of filling vacancies through internal recruitment and promotions reduces the attrition rate, as it creates a positive environment in the organization. Thus, enhancing the commitment and confidence of the employee to stay on.

Findings: Here, we observe that the highest attrition % being 23.08 is among the group of people who have not been promoted for more than 15 years. Also, it is seen that the employees who have been promoted recently have quit the organization. This means that employees look for better opportunities as soon as they receive promotions.

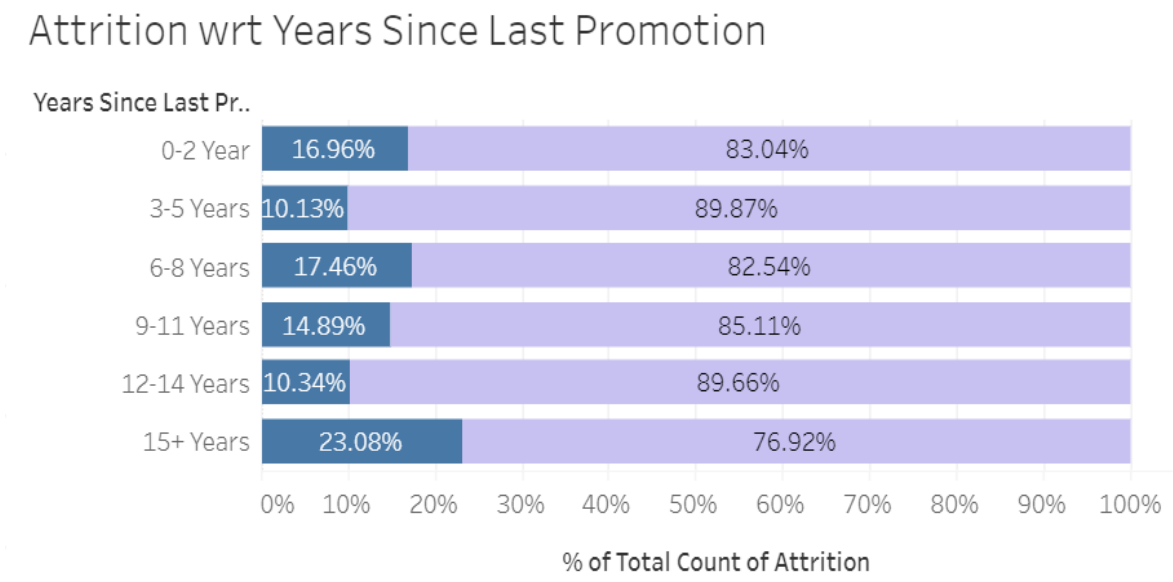


Fig. 7 Attrition w.r.t Years Since Last Promotion

H. Sheet - 8: Attrition w.r.t Total Working Years

In this sheet, the total working years of employees are taken into consideration. In any company, it is more likely for freshers to leave companies more often as they do not have enough confidence and trust yet. Senior employees tend to stay in the organization as their working years increase.

Findings: It can be seen from the total working years' graph, that employees with 1 to 10 years have a larger count of attrition of 157, than the count of senior employees which is 2. To avoid the high attrition of freshers, the organizations can provide them opportunities for continuous learning and provide them fair pay and benefits.

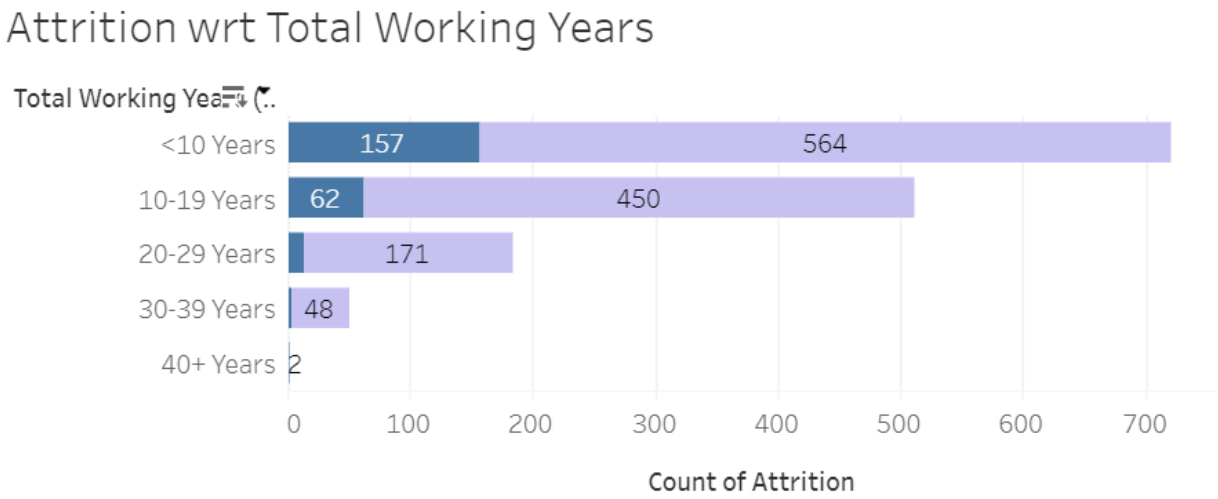


Fig. 8 Attrition w.r.t Total Working Years

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I. Sheet - 9: Attrition w.r.t Job Satisfaction

The data contains four ratings for job satisfaction i.e., 1 'Low', 2 'Medium', 3 'High', 4 'Very High'. Job satisfaction and employee loyalty are better in companies that allow their staff the freedom to unleash their creativity and never fail to appreciate a job well done. Satisfied, highly motivated, and loyal employees form the core of a company and also have an impact on the productivity of an organization.

Findings: The graph shows that the attrition rate decreases as the job satisfaction rating increases. Out of all the people who rated 'Low', 22.84% have left the company. Whereas, among the people who rated 'Very High', only 11.33% have left the company. This means that companies must offer better training, opportunities, and appraisals to avoid attrition.

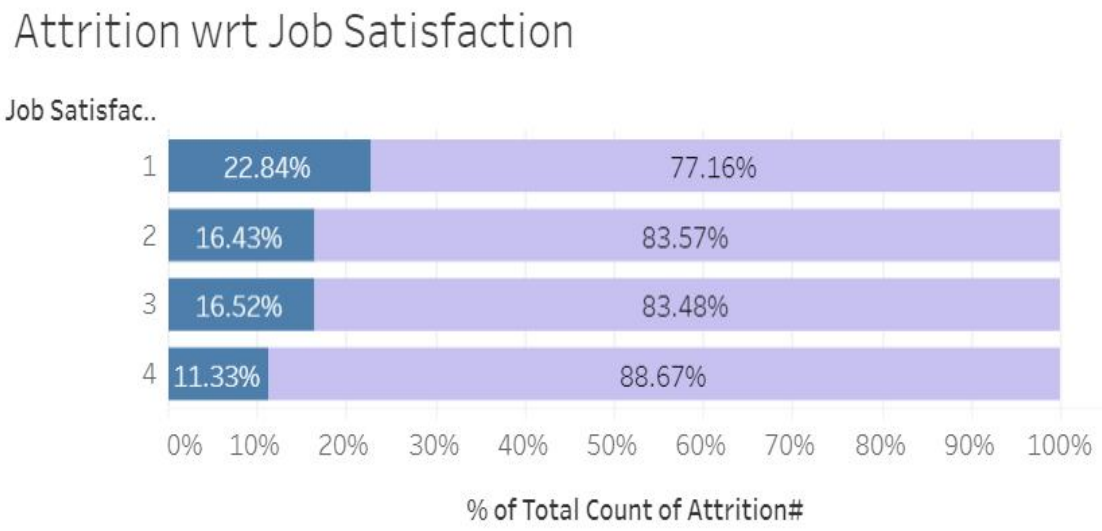


Fig. 9 Attrition w.r.t Job Satisfaction

J. Sheet - 10: Attrition w.r.t Environment Satisfaction

The data contains four ratings for Environment satisfaction i.e., 1 'Low', 2 'Medium', 3 'High', 4 'Very High'. Workplaces that are free from stress, morale issues, harassment, and discriminatory practices can create a positive and healthy environment for everyone.

Findings: The graph shows that the attrition rate decreases as the environment satisfaction rating increases. Out of all the people who rated 'Low', 25.4% have left the company. Whereas, among the people who rated 'Very High', only 13.5% have left the company. You can collect feedbacks, run polls and surveys across different teams to understand what employees want, where are the gaps in the work environment, how employees feel about their workplace and teams.

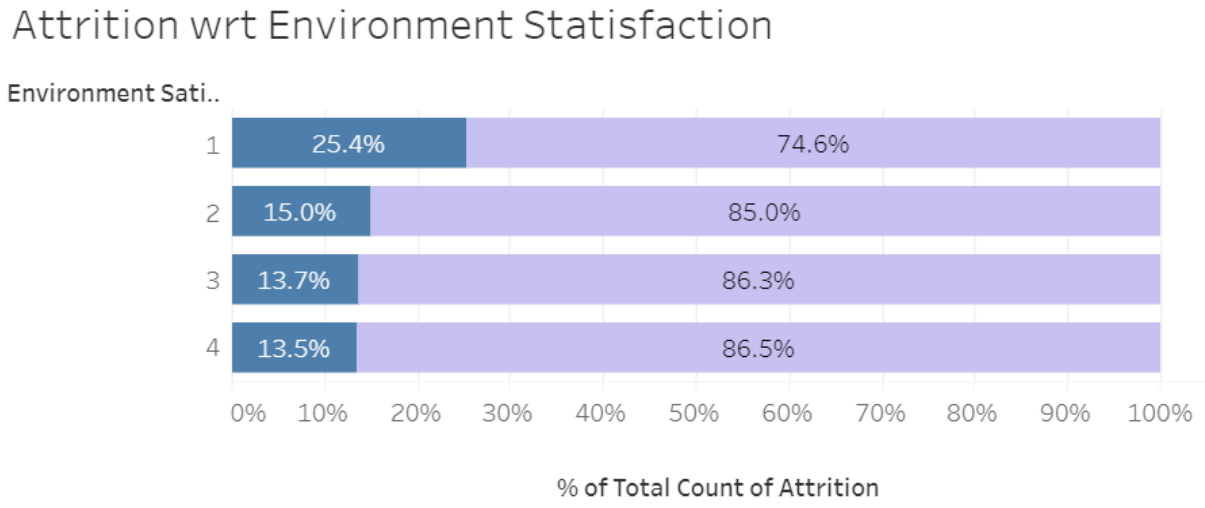


Fig. 10 Attrition w.r.t Environment Satisfaction

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K. Sheet - 11: Attrition w.r.t Job Involvement

The data contains four ratings for Job Involvement i.e., 1 'Low', 2 'Medium', 3 'High', 4 'Very High'. Job involvement of the employee in the processes or tasks of the company is the most influencing parameter for his attrition. Research shows that employees who play an active role in workplace practices and processes are more engaged. And engaged workers are good for the bottom line because they're more productive, creative, and inclined to stay with your company.

Findings: The graph gives a clear view of the rate of attrition rapidly decreasing as the job involvement rating increases. Out of all the people who rated 'Low', 33.73% have left the company. Whereas, among the people who rated 'Very High', only 9.03% have left the company. Organizations can increase employees' involvement by creating open forums for honest employee feedback and express their ideas and opinions.

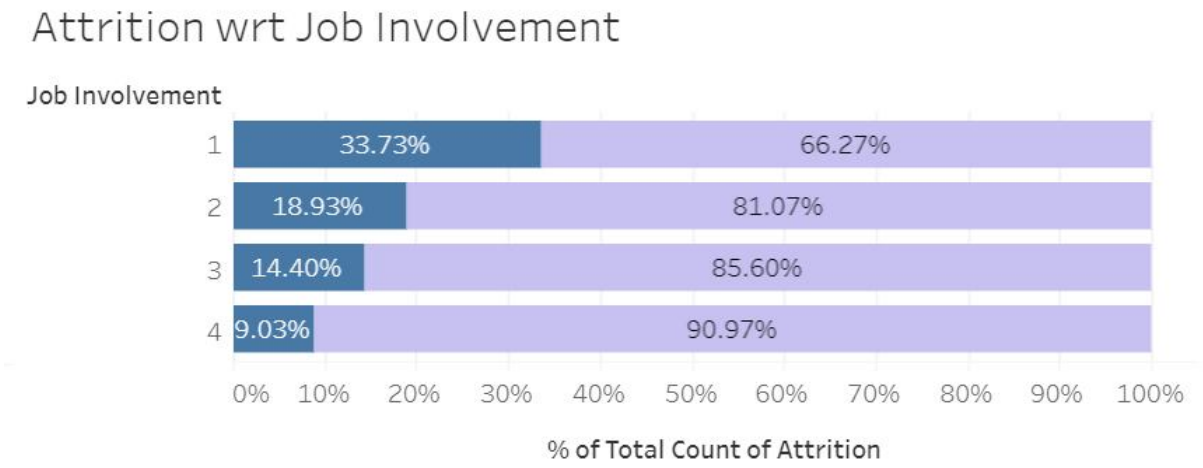


Fig. 11 Attrition w.r.t Job Involvement

L. Sheet - 12: Attrition w.r.t Percent Salary Hike

A simple pay raise can boost morale, increase employee satisfaction, encourage hard work, and prevent attrition of talented employees. If the management consistently rewards good performance, it will strengthen their relationship with their best employees and also encourage average employees to improve. Offering salaries lower than the market will surely result in voluntary resignation, leading to staff attrition.

Findings: The graph shows that the attrition percentage is highest (14.29%) among people who received the lowest hike of 11%; whereas, among people who received a 25% hike in their salary, only 1.22% have left. To prevent your employee from leaving the company, conduct regular salary reviews for each of the job positions that you have on offer, including entry-level, experienced, and supervisor-level roles. Compare your pay packages with reliable statistics and averages.

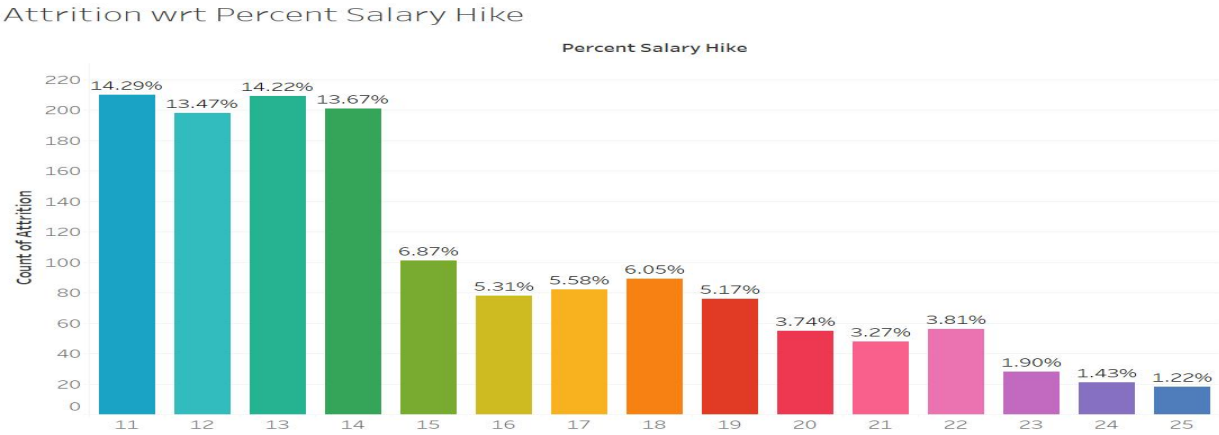


Fig. 12 Attrition w.r.t Percent Salary Hike

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V. CONCLUSION

The main objective of the organization is to earn profit and to earn profit the employer should concentrate in retaining talents and concentrate in making them stick to the organization for the long run. Employees are the assets of the organization. Hence it is important for the employers to minimize the attrition rate and help in both individual as well as organizational growth [10].

Thus, Organizations should create an environment that fosters ample growth opportunities, appreciation for the work accomplished and a friendly cooperative atmosphere that makes an employee feel connected in every respect to the organization. Retention plans are an inexpensive way of enhancing workplace productivity and engaging employees emotionally [11]. Proficient employees keep the quality up and business operations run smoothly along with the cost saving in the longer run.

VI. FUTURE SCOPE

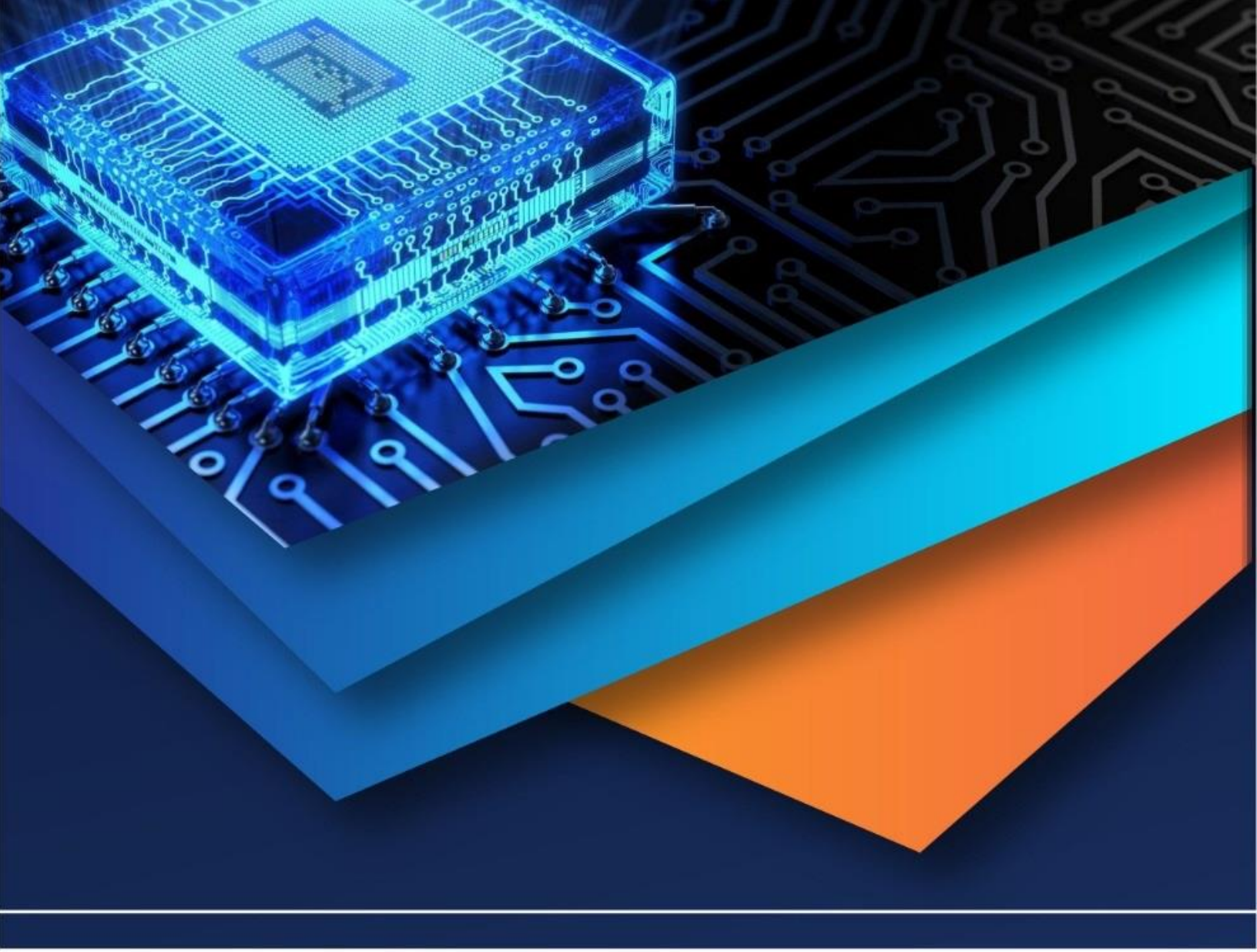
Each organization has to construct its personal motivation system based on compatibility between organizational and individual goals. A solution varies from organization to organization and from industry to industry. The organizations should have a clear understanding of their employee turnover rate and how it is affecting their company. The proposed approach of Employee Attrition Analytics will be able to build a visualization model to visualize and analyze the employee churn in an organization employing the employee demographics and job factors. The visualization tool “Tableau” uses the historical data to generate a trend of attrition.

Using Statistical Analysis and exploratory factor analysis the various reason of attrition may be determined. The current approach serves to provide solution for reducing the business risk by predicting the employee churn. The outcome of the analysis can’t be generalized. The study needs to be analyzed on a bigger dataset. An enhanced dataset can also be used to further improve the analysis. Better data visualization and interpretation tools may be considered for the future work of this research. The data points of an employee can be tracked over time and strategies can be employed by the management to minimize the rate of attrition.

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