

EMPLOYEE ATTRITION

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Abstract—In the 21st century, Industries are the backbone of the economy of many countries and therefore contribute majorly to the GDP. For any organisation, The manforce plays an important part . Therefore all organisations have an HR Department that takes care of important employee related activities. Employee Attrition is one of those. It is often said Attrition and retention rates are often used by the HR Department to identify employment trends, overall business growth. The present article focuses on various factors behind Attrition and how the organisation predicts and deals with Attrition.

I. INTRODUCTION

Employee attrition is a process by which an employee leaves the organisation through resignation or various other reasons. Some of the reasons for attrition like retirement due to age are unavoidable but some of the factors can be controlled by providing basic facilities needed for an Employee. Employee attrition can affect both high and low performers in a company. Staff turnover could be of two types: positive and negative. Positive Attrition occurs when low performers of a company leave or are fired. However, when top-performing employees who are truly an asset to the company start looking for another path, it is known as negative attrition. Negative attrition, obviously implies a larger, more serious problem for an organization. Attrition becomes a major concern when it crosses a threshold.

II. DIFFERENT KINDS OF ATTRITION

A. Due to retirement

There is nothing an organisation can do as they don't have authority over when an employee wishes to retire.

B. Voluntary Attrition

This is the most common and controllable form of attrition where an organisation can limit such form of attrition. Here an employee decides to leave for various reasons that will be discussed later.

C. Involuntary Attrition

Here the organisation initiates the exit due to any work or disciplinary related issues with the employee.

D. Internal Attrition

These include employees quitting the job in a department to join another department in the same organisation..

E. Demographic-specific attrition

Demographic-specific attrition means that employees from a specific group i.e. women, ethnic minorities, people with disabilities or the older professionals leave the company together.

III. FACTORS AFFECTING ATTRITION

A. Personal Motivation

A change in an employee's personal life may compel them to switch jobs. For example new parents might want to move to a city with better schools, a mid-career professional may want to return to native place – these reasons can be any.

B. Professional Motivation

This is where HR could play a massive role in controlling attrition. An employee might leave because they felt there simply aren't enough opportunities for progression in your organization. This is the case in several technology companies, when an employee wishes to move up the ladder but doesn't get opportunities to prove their worth.

C. Challenges with workplace

This type of attrition is pretty common but is relatively easy to fix. Challenges faced in a workplace can range from "uncollaborative leadership to the lack of requisite tools for work". Someone who is happy with their job won't think of quitting if most of their basic requirements are met.

D. Poor Employee-to-job-fitment

There are cases where employees join a company full of enthusiasm but leaves after a month or two. This could be an indicator that the job was not right for that person.

IV. RELATED WORKS

Various papers we have gone through are:

1. Employee attrition and retention in a cut throat competitive environment in India

Source worldwidejournal.com

Published Feb 2015

The major claim includes that the most important reason for attrition is Compensation, because plenty of opportunities are there in the market for experienced, well qualified employees if they switch over to other companies and they will pay more.

The major takeaway from this paper is that Employee Attrition affects a company in many different ways and HR Managers should always keep this in their mind while recruiting.

2.A Study on Reasons of Attrition and Strategies for Employee Retention

Source ijera.com

Published Dec 2015

Major claims from this paper includes improving the role of HR manager in retaining the employees and proper job rotation to decrease the workload.

Major takeaway from this paper is that most of the employees are facing the problem regarding the accommodation and transportation facilities. The organization should increase these facilities so as to provide better facilities based on the availability and also give some additional monetary benefits to its employees.

3.Employee attrition and retention in Indian market : A Case study

Source ResearchGate

Published Aug 2016

The main claims of this paper is that the main objective of any organisation is to earn maximum profit. But in order to accomplish maximum revenue, the organisation should focus more on employees and the methods to retain them for their long run. It is acknowledged that due to deficiency of growth prospects and salary many employees are under pressure to switch their jobs.

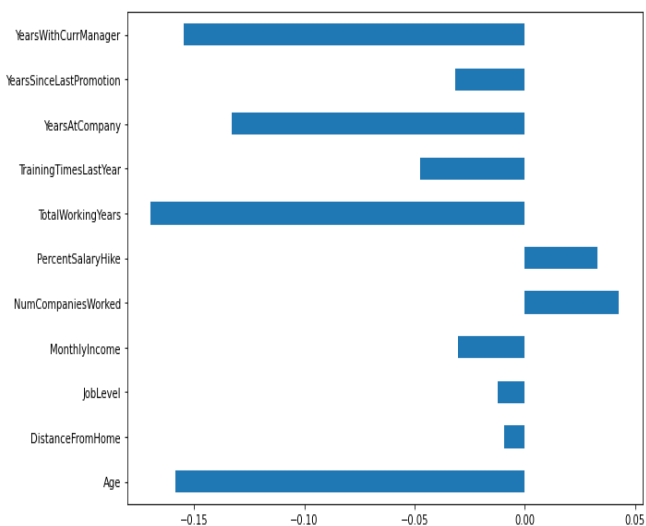
The major takeaway is that in an organisation communication happens between members of different hierarchical positions. Superior- subordinate communication denotes the interfaces between organisational leaders and their subordinates and how they work together to accomplish personal and organisational goals. Thus the superior subordinate relationship should always be nice to decrease employee attrition.

V. DATA PREPROCESSING

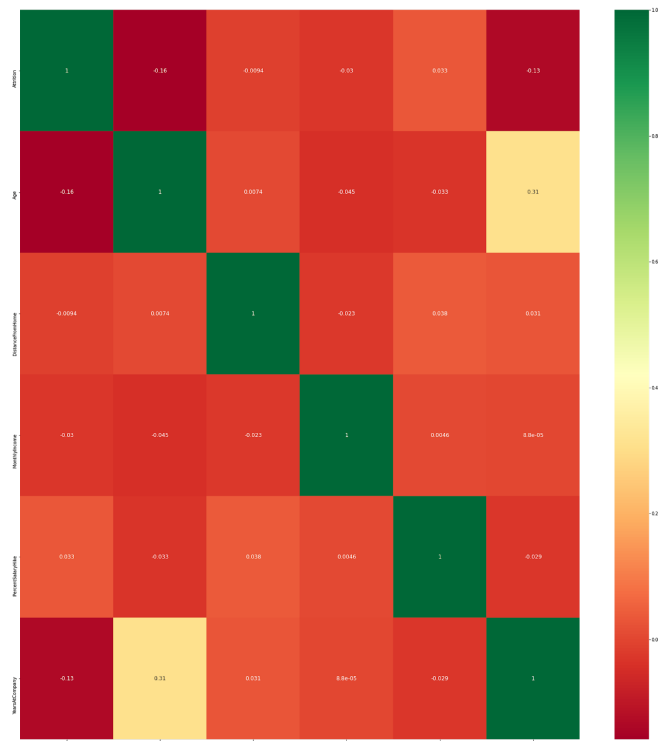
The dataset is about finding whether an employee stays in the organization or leaves(Employee Attrition) based on nearly 20 features after dropping unwanted records because of its unique nature on all entries and some having no correlation on target variable.

Records having null values were directly removed since there were a very less number of records compared to that of the total number of rows in the dataset. The label is biased towards no i.e. Employees are most likely to stay in the organization. Since the data is imbalanced which is of ratio 16:84,only certain performance metrics will be considered for checking the model's performance. Using techniques like under or oversampling and using k-fold cross validation helps in dealing with these kinds of data.

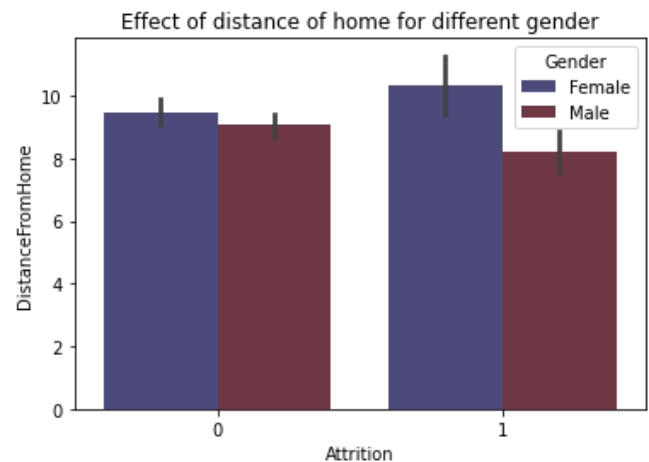
VI. VISUALISATIONS



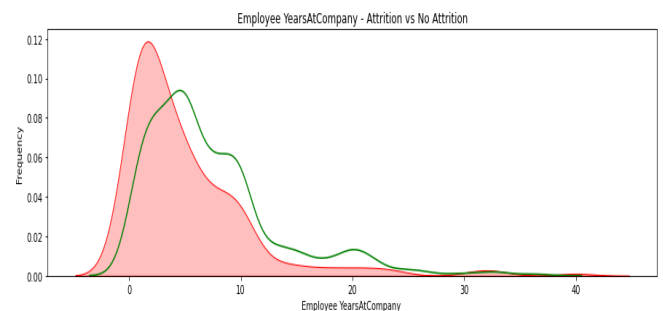
The correlation of various factors to the final attrition value i.e. 0, which means employee hasn't left and 1, which means employee has left.



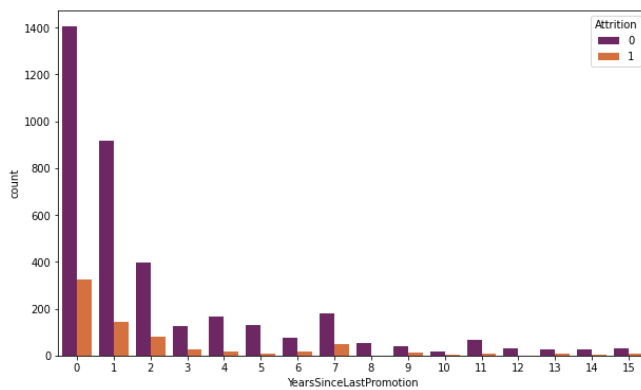
This is the correlation graph of various features.



The effect distance from home has on employee attrition on men and women. It is pretty evident that distance from home plays a more vital role in employee attrition for a woman than it does for men.

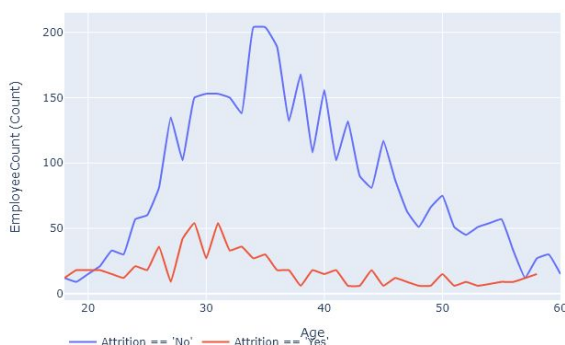


This is how years spent in company affects attrition. Initially for 1 year probability of attrition is less but then it increases drastically. Later on the more the employee spends, the less the probability of attrition.

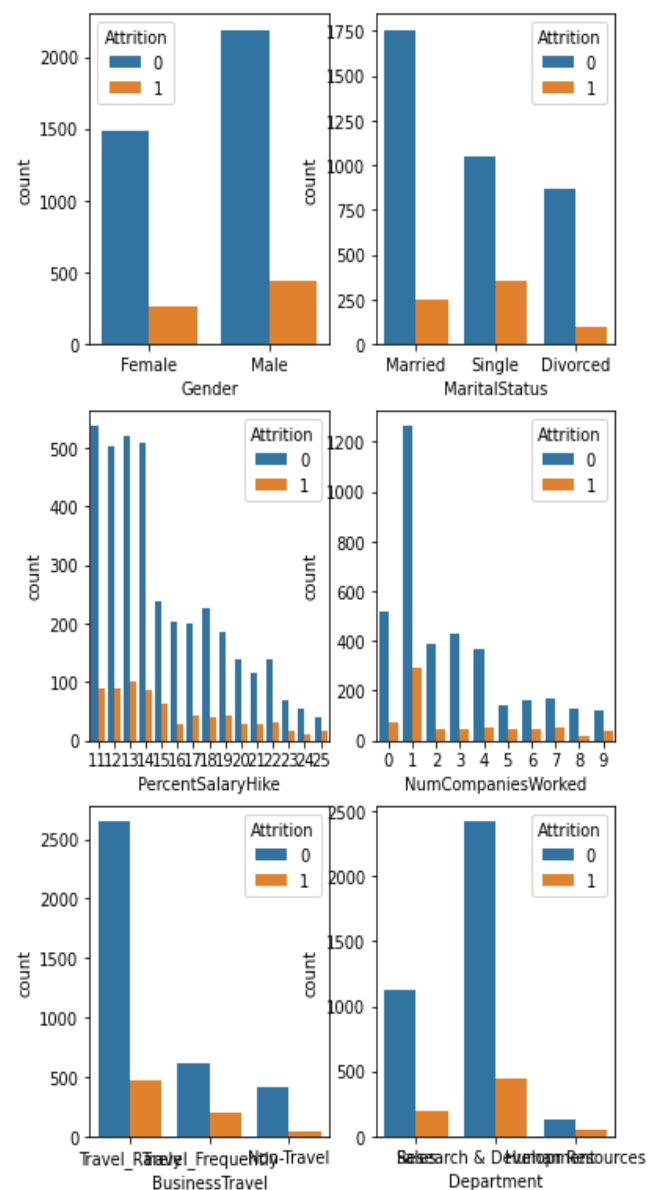


This shows the role promotion plays in controlling employee attrition.

EmployeeCount by Age (Count)



The above graph clearly shows which age groups are more probable and who are not much probable for attrition.



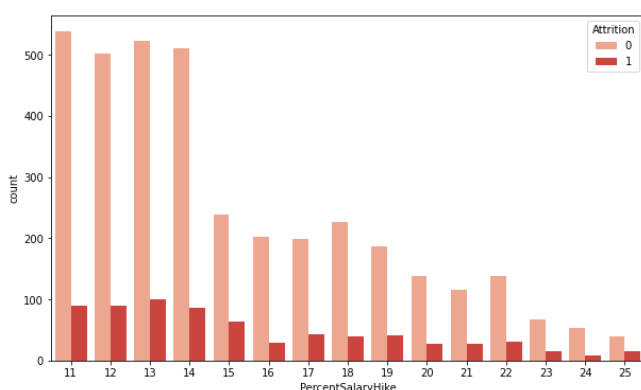
This is how various features affect the attrition process for an organisation.

VII. MODELS BUILT

Initially we tried to use logistic regression to predict the possibility of attrition as it works very well especially for binary classification problems. A logistic model is used to model the probability of a certain class or event existing such as pass/fail, win/lose, spam/not spam or head/tail. Logistic regression uses a method from which it got its name i.e. logistic function. It is also called a sigmoid function. It forms an s-shaped curve and can take any real valued data and transform it in range 0 to 1 using the equation $1 / (1 + e^{-\text{value}})$.

The model reached decent enough accuracy but poor recall and F1-score.

Therefore we need to choose another better model to increase accuracy in all aspects.



The above graph clearly shows giving salary hikes keeps the employee happier and reduces attrition rate.

Another important and effective classifier in machine learning is random forest classifier. Random forest includes a large number of decision trees that operate as an ensemble. Each tree in the forest spits out class prediction and class with most votes becomes model prediction. Therefore the results obtained by the random forest classifiers are pretty accurate. The model reached gives good accuracy with good precision, recall and F1 score too. Therefore this is the best model that suits the dataset.

4. https://www.researchgate.net/publication/307546344_EMPLOYEE_ATTRITION_AND_STRATEGIC_RETENTION_CHALLENGES_IN_INDIAN_MANUFACTURING_INDUSTRIES_A_CASE_STUDY

5. http://www.ijera.com/papers/Vol5_issue12/Part%20-%201/1512015760.pdf

VIII. HANDFUL INSIGHTS

1) Most of the employee attrition related issues could be solved by given employees proper compensation and basic amenities.

2) HR Manager plays a crucial role in employee retention and job rotation to decrease the workload on the employees.

3) Few of the factors like distance from native place, age plays a more deciding factor for women in case of employee attrition.

4) Every employee looks for job satisfaction most, even more than the salary or anything else. They need better amenities and hike in salary even if they don't get more salary.

5) The attrition rate increases drastically for young people but after a few years it gradually keeps on decreasing.

IX. REFERENCES

1. <https://www.investopedia.com/terms/a/attrition.asp>

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3. https://www.worldwidejournals.com/paripex/recent_issue_s_pdf/2015/February/February_2015_1424333692_98.pdf