A SURVEY PAPER ON EMPLOYEE ATTRITION PREDICTION USING MACHINE LEARNING TECHNIQUES

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Abstract— **Attrition is critical in the industry these days. It's the major problem which highlights in all the organizations. "Attrition is said to be the gradual reduction in the number of employees through retirement, resignation or death. It can also be said as Employee Turnover or Employee Defection" A well-trained and welladapted employee leaves the organization, it creates a vacuum. So, the organization loses key skills, knowledge and business relationships. Modern managers and personnel administrators are greatly interested in reducing Attrition in the organization, in such a way that it will contribute to the maximum effectiveness, growth, and progress of the organization. Therefore, we need an methods, algorithms to prediction of employee attrition using various data mining techniques .**

Keywords— **Employee turnover, organizational performance, Employee Attrition, Employee Retention, Attrition rate, Data mining.**

I.INTRODUCTION

Employee is the most important human capital asset who results to reflect the success of organization. The brunt of globalization has resulted to mobilization of workforce from one organization to another, region to region and sometime from one country to another. Hence, it has become greatest challenge for HR manager to handle the loss of skilled employee's attrition. In HR practice, the term Employee Turnover and Attrition are interchangeable with respect to industry and its causes. Attrition means reduction of employee through retirement, resignation, or death. Employee Attrition is serious issue that addresses the voluntary or forceful termination of talent and skilled employee, which affects the goodwill and productivity of organization. Employee Attrition can be indicated that employees are leaving due work related or personal problem. In most of the research it has been found that work related in the major cause for higher employee attrition rate High attrition result to loss on the cost of company spent on recruitment and training. The impact of employee attrition leaves a long term negative impression on goodwill of organization. In simple words, it can said that employee attrition is caused due to non fulfillment of employee's perception or expectation towards employer or failure of employer's commitment towards employees satisfaction.

Employees are the most valuable assets of an organization. They add value to the organization in terms of quantity and quality as well. Therefore, it is indispensable to maintain a permanent and promising workforce. Over the years it has become a tough task for employers and thereby increased attrition in the organizations. Attrition of employees in a limited measure is desirable for influx of new ideas in any type of organization. It helps organizations to maintain their agility in a fast changing environment.

Need:

- ➢ Losing a valuable employee in between a project might cause delay in project completion.
- ➢ Losing a key team member might hamper the team dynamics affecting all future projects.
- ➢ Finding the right replacement for the lost employee is a cumbersome task.
- ➢ Additional cost might be incurred in training the new employee.
- ➢ These unwanted situations could be avoided by predicting employee attrition and providing incentives for staying to employees with a chance of leaving.

II. LITERATURE REVIEW

In [1], computer scientist was once quoted as spoken language, "You remove our prime twenty workers and that we [Microsoft] become a mediocre company". This statement by computer scientist took our attention to 1 of the main issues of worker attrition at workplaces. worker attrition (turnover) causes a major price to any organization which can afterward impact its overall potency. As per CompData Surveys, over the past 5 years, total turnover has accumulated from fifteen.1 p.c to one8.5 percent. For any organization, finding a well trained and experienced worker may be a complicated task, however it's even additional complicated to interchange such workers. This not solely will increase the many Human Resource (HR) price, however additionally impacts the market price of a corporation. Despite these facts and ground reality, there's very little attention to the literature, that has been seeded to several misconceptions between time unit and workers. Therefore, the aim of this paper is to supply a framework for predicting the worker churn by analyzing the employee's precise behaviors and attributes mistreatment classification techniques.

Hiring new workers continually prices organization some immense prices. Some revenues area unit tangible like coaching expenses, and also the time it takes, once associate worker being a lowerclassman to once they become a productive member. Human Resource departments generate a vast quantity of knowledge on a daily basis: leaves, social conflicts, annual evaluations, wages and advantages, recruitments, departures, career evaluations, etc. however the large perplexity is to seek out out the proper and correct replacement of the workers WHO have left.

In [2] currently a day's worker Attrition prediction become a serious drawback within the organizations. worker Attrition may be a huge issue for the organizations specially once trained, technical and key workers leave for a much better chance from the organization. This leads to loss to interchange a trained worker. Therefore, we tend to use this and past worker knowledge to research the common reasons for worker attrition or attrition. For the hindrance of worker attrition, we tend to applied a standard classification ways, that is, call tree, supply Regression, SVM, KNN, Random Forest, Naive mathematician ways on the human resource knowledge. For this we tend to implement feature choice technique on the information and analysis the results to stop worker attrition. this can be useful to firms to predict worker attrition, and additionally useful to their economic process by reducing their human resource price.

An worker would prefer to be part of or depart a corporation betting on several causes i.e. work setting, work place, gender equity, pay equity and lots of different. the remainder of the workers might imagine concerning personal reasons for example relocation because of family, maternity, health, problems with the managers or co-workers in an exceedingly team. worker attrition may be a major drawback for the organizations notably once trained, technical and key workers leave for best

opportunities from the organizations. This finally results into financial loss to substitute a trained worker. Consequently, we tend to utilize this and past worker knowledge to assess the acquainted problems for worker attrition. the worker attrition identification helps in predicting and resolution the problems of attrition. we are able to use this knowledge to prevent the rate of the workers.

In [3] , Considering the worldwide competitive state of affairs, there's ocean of opportunities for hot and gifted persons within the world, and given an honest probability, workers half from one organization to a different. turnover is considered the key issue for all organizations currently, as a result of its adverse effects on work productivity, and accomplishing structure objectives on time. to beat this drawback, organizations area unit currently taking support via machine learning techniques to predict the worker turnover. With high exactitude in prediction, organizations will take necessary actions at due course of your time for retention or succession of workers. Most of the information comes from basic time unit primarily based info systems, that aren't extremely economical in prediction and modeling and these models aren't terribly correct in knowledge models and can't assist the organizations to require prospering selections. the first objective of this analysis paper is to predict worker attrition i.e. whether or not the worker is reaching to leave or still work inside the organization. during this paper, we tend to propose a completely unique model for predicting worker Attrition mistreatment Machine Learning primarily based approach i.e. XGBoost that is extremely sturdy. so as to validate the accuracy of the system projected for worker Attrition, the information set is noninheritable via on-line info and fetched to the system and extremely gorgeous and exactitude results area unit shown by the system with respect to turnover behavior.

In [4], The growing interest in machine learning among business leaders and call manufacturers demands that researchers explore its use inside business organisations. one in all the main problems facing business leaders inside firms is that the loss of gifted workers. This analysis studies worker attrition mistreatment machine learning models. employing a artificial knowledge created by IBM Watson, 3 main experiments were conducted to predict worker attrition. the primary experiment concerned coaching the initial class-imbalanced dataset with the subsequent machine learning models: support victor machine (SVM) with many kernel functions, random forest and Knearest neighbour (KNN). The second experiment centered on mistreatment adaptational artificial (ADASYN) approach to beat category imbalance, then preparation on the new dataset mistreatment the abovementioned machine learning models. The third experiment concerned mistreatment manual undersampling of the information to balance between categories. As a result, coaching associate ADASYNbalanced dataset with KNN (K = 3) achieved the very best performance, with 0.93 F1-score. Finally, by mistreatment feature choice and random forest, F1-score of zero.909 was achieved mistreatment twelve options out of a complete of twenty nine options.

III PROBLEM DEFINITION

Whenever a well-trained and well-adapted employee leaves the organization, it creates a vacuum. The paper aims at identifying factors affecting employee attrition like salary hikes, growth opportunities, work environment, business travel opportunities, superior – subordinate relationship, recognition and appreciation, years since last promotion etc. These factors would then be used to predict employee attrition. This

prediction would help in retaining valuable employees by providing incentives.

Complication:

Employee attrition could be attributed to a wide variety of factors ranging from personal preferences to work environment to monetary goals.

Identifying the most relevant factors is a difficult task.

Trade-off between building a simple model and making better predictions by including more independent variables.

Find the right model which has a low false negative rate since classifying an employee at risk of leaving as not at risk is critical.

IV CONCLUSION

Retention of talent and skilled employee is crucial dilemma for HR Manager especially in manufacturing industry. This study has identified those complex factors which are key responsible for employee attrition in selected organization. The education and experience of employee creates opportunity for new job in market and it helps to enhance better career opportunity. The ethical work culture, cordial employee relation and implementation of organizational policies are the most attractive area of making employee to stay back in organization.

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