

# **Employee Attrition Analysis and prediction Using Python and Qlik**

# BI Analytics and ML

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# Abstract

Employee turnover (attrition) is a major cost to an organization, and predicting turnover is at the forefront of needs of Human Resources (HR) in many organizations. Until now, the mainstream approach has been to use logistic regression or survival curves to model employee attrition. However, with advancements in machine learning (ML) and analytics we can now get both better predictive performance and better explanations of what critical features are linked to employee attrition. Here we will explain how ML and data analytic tool can help us to analyses and predict the employee turnover

### The Problem Employee Attrition:

Organizations face huge costs resulting from employee turnover. Some costs are tangible such as training expenses and the time it takes from when an employee starts to when they become a productive member. However, the most important costs are intangible. Consider what is lost when a productive employee quits new product ideas, great project management, or customer relationships. With advances in machine learning and data science, it’s possible to not only predict employee attrition but to understand the key variables that influence turnover.

# Model Predictive Attrition Model – it’s all about the parameters

Through predictive algorithms, companies’ gain better understanding and can undertake preventive measures for employee attrition. On a basic level, the model works by clustering/ classifying employee profiles based on various attributes such as age, sex, marital status, education level, work experience, distance from hometown, etc. and generates various levels of risk of attrition. Occasionally, other parameters like performance over the years, pay raise, work batch, educational institution are also taken into consideration.

However, the accuracy of the model is directly proportional to the selection of parameters, which in turn, leads to the generation of the ‘type’ of predictive model most suitable for the organization.

# We use the HR employee attrition data set that comes from the employee exit portal as a train data and the employee details as test data to test out several advanced ML techniques. The dataset can includes minimum 3-year data set of employees who have left the organization.

We can use supervised or unsupervised methods to train and predict the outcome. The outcome dataset can be leveraged using Analytical tools such as Qlik, Tableau for more detailed visualization

# Benefits of Predictive Attrition Model

This model is helpful while making the following decisions:

* Evaluation of employee requirements, their strengths and weaknesses
* Minimize cost of new talent acquisition based on the employee profiling and company requirements
* Analysis and assessment of the loss in expertise and skillsets
* Measurement of financial and productivity loss due to attrition
* Able to plan and minimize the loss
* Provides good understanding of workforce supply and demand
* Able to prepare contingency plans based on the insight and foresight provided by the model

# Conclusion

Predictive Attrition Model helps in not only taking preventive measures but also into making better hiring decisions. Deriving trends in the candidate’s performance out of past data is important in order to predict the future trends, as well as to board new employees. Moreover, HR can use the employee data to predict, analyze attrition based on different dimension such as location,BU etc, They and easily figure out the possible reasons behind it and can act appropriately to prevent it.